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SATURDAY JUNE 12 1954

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JUNE 12 1954

ENGINEERING AND INDUSTRIAL HYGIENE*

BY

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Industrial Disabilities and Compensation Insurance

Of the disabilities falling within the jurisdiction of our various State Compensation Boards in the United States roughly 97% are accidents; about 3% are chronic diseases like benzol poisoning or silicosis. Of these 3% about two-thirds are dermatoses. In cost of time lost and of medical care the occupational diseases rank high, and actually may assume the spotlight of attention.

Our compensation awards are covered by insurance placed by the employers through insurance companies or through State insurance. In Ohio, for example, compensation insurance is a State monopoly, while in New York an employer can insure either with a private company or with the State. If the employer posts a bond for an amount approved by the State he can be self-insured. The premiums paid are revised periodically according to the experience or record. When the experience is very bad the premium charges may be so high that the employing company cannot afford to insure, or the insurance company can simply refuse to accept the risk. In such an event the Insurance Commissioner of the State can pro-rate the policy among companies doing business in the State, and the companies then become the reluctant recipients of the business.

The result of this method of compensation insurance is that the companies writing the policies have developed first-class inspection schemes, with excellent staffs of industrially minded physicians, engineers, industrial hygienists, and chemists, and it is to the interest of insured and insurer to cut lost time to the minimum. In the policies freedom of entry and inspection is given to the insurance companies. Their men visit the insured companies and give them valuable consulting service.

The insurance companies' inspection scheme reminds one very much of your British Government inspectorate. Yours is more than a century old while ours is very young. But your Governmental inspectors, operating from your Ministry of Labour in London and distributed all over industrial Britain, have no opposite number in our Federal Government set-up. The industrial hygiene laboratories of the Public Health Service are available to industry for consultation and research. Their surveys of various industries have often set the health standards under which the industry operates. The laboratories of the Bureau of Mines and the Bureau of Standards likewise function for the service of industry (employer and employee alike). None of these three Federal Bureaus is in any sense administrative, and they have not the right of entry or inspection. That last function is vested legally in the States, every one of which zealously guards its "States' rights" as granted under our constitution.

Your statistics of industrial illness are consistently better than ours. In fact, they are so much better that I use them as a guide in estimating our American industrial illnesses—a somewhat humbling admission. But our accident figures I think are as good as or perhaps better than yours.

Development of Industrial Hygiene in U.S.A.

In 1906 New York State provided for the appointment of a physician to be known as a medical inspector of factories. The staff was gradually increased, and in 1913 included a mechanical engineer and a chemist in addition to the physician. In 1924 the Division of Industrial Hygiene of New York was made an independent body as the "Bureau of Industrial Hygiene," and started publishing its *Industrial Hygiene Bulletin*. In 1936 Leonard Greenburg, a physician who started out as a sanitary engineer, became executive director of the Division. The various bulletins, codes, and rules formulated by New York have set the pattern for such things throughout all the States of the Union.

One of our oldest governmental departments is the Public Health Service. In 1914, within its Division of Scientific Research, there was created an office of Industrial Hygiene and Sanitation Investigations. This same year A. J. Lanza and others from the Bureau of Mines and the Public Health Service began their study of the silicosis problem in our tri-state district (Oklahoma, Kansas, and Missouri). From 1920 to 1930 the Office of Industrial Hygiene was under the direction of L. R. Thompson, a physician of great experience in the general field of public health. He initiated the Service's series of surveys of the dusty trades, which were continued and expanded by his successors. In 1937 the organization became the Division of Industrial Hygiene under the very able leadership of R. R. Sayers, who had been for some years surgeon for the Bureau of Mines. Sayers had taught electro-chemistry and physical chemistry at Buffalo, where he took his medical degree in 1914.

The Bureau of Mines was established in 1910 within the Department of the Interior. About 1917 during the first world war the Experiment Station at Pittsburgh was under the charge of a chemist, A. C. Fieldner. One of the

*Taken from papers presented at the London School of Hygiene and Tropical Medicine on April 20, 1953, and at the Annual Provincial Meeting of the Association of Industrial Medical Officers, Newcastle-upon-Tyne, on July 4, 1953.

Bureau's duties was the supervision of safety in mines, so it was natural that these should include the testing of safety equipment and the appraisal of masks for protection against gases. Its special knowledge was used by the Chemical Warfare Service, and after the first world war the Bureau began issuing its specifications for protective equipment of all kinds. Industry accepted these specifications with alacrity, and industrial hygiene benefited.

The *Journal of Industrial Hygiene* appeared in 1919. The chief editors were physicians—David L. Edsall for the United States, and Thomas M. Legge (later Sir Thomas) for Britain. My brother, Cecil K. Drinker, a physician and physiologist, and his wife, Dr. Katherine R. Drinker, carried the real responsibility, and the prompt success of this journal was due to them on our side of the ocean, and to Professor Edgar L. Collis in England. Early contributors included a few men in general public health, like Professor C.-E. A. Winslow, and, occasionally, chemists like Fieldner, Katz, and Yant, of the Bureau of Mines, but the general tone of the papers was medical. Dr. Alice Hamilton and Dr. C. K. Drinker, of Harvard School of Public Health, suggested that the journal's field should be expanded to include some engineering. I became managing editor, and we asked Yant to join the journal's editorial staff. From then on we took papers directed more towards industrial hygiene and industrial medicine and less towards industrial surgery.

In 1935 a group of industrialists, physicians, and industrial hygienists, with the Mellon Institute for Industrial Research, formed the Air Hygiene Foundation, later changed to the Industrial Hygiene Foundation as its scope and interests expanded. In 1938 the American Conference of Governmental Industrial Hygienists (A.C.G.I.H.), with J. J. Bloomfield, of the U.S. Public Health Service, as co-ordinating figure, formed a group which included all those in Federal and State industrial hygiene bureaus. In 1939 the American Industrial Hygiene Association was formed. From then on these last two societies have met annually with the much larger and older society, the Industrial Physicians and Surgeons. The combined programmes run over a period of about eight days and are usually held around mid-April. For a time the American Public Health Association had an active section devoted to industrial hygiene, but interest lapsed. Now it is again becoming an active unit. It meets in the autumn, as does the Industrial Hygiene Foundation.

The National Safety Council, with headquarters in Chicago, is supported by industry and concerns itself with accidents of all kinds, but especially with those of industry. Traffic accidents are a major problem in the United States. Many of our industrial physicians, our engineers, and our industrial hygienists are active in the field of accident prevention.

Establishing Standards of Industrial Hygiene

The word "hygiene" implies control of one's well-being, while "health" defines one's status at the moment. We are in good or bad health. The Surgeon General reports upon the health of the nation. The medical director of an industry reports upon the health of workers (and he may even include their families). These reports are based upon the results of medical practice.

Industrial hygiene is concerned primarily with prevention. It is the duty of the industrial hygienist to determine the causes of, and to prevent, industrial illnesses, not to diagnose and treat them. He reports upon the extent of the hazard, if any exists, and its control. The industrial hygienist may be able to define the aetiology of industrial illnesses better than the medical practitioner. If this state of affairs results in a little duplication, or confusion even, it does no harm. Clearly, the person held responsible for prevention must ferret out the cause if he is to see his preventive measures put into force.

The industrial hygienist's most convenient criterion of working conditions is the nearness with which the worker's environment approaches the ideal. We measure the quality of the environment by our arbitrary specifications. In the United States these specifications are set up by different committees chosen from the qualified personnel of the nation.

About 1940 the American Standards Association, at the instigation of the late Steven R. Whiting, of Liberty Mutual Insurance Company, formed a committee to formulate "allowable concentrations" of such impurities as carbon monoxide, lead dust, and various solvent vapours. The series of approved reports began to appear in 1941. A few years later the governmental industrial hygienists started their less formal but more realistic series, "threshold limit values," which now are revised and published annually. As a practical guide to control of conditions they are most valuable, and are used all over the world. For some years the American Society of Mechanical Engineers has had specifications covering permissible stack emissions from power plants. The City of Los Angeles, troubled by a vexing smog problem, passed legislation covering emissions from chimneys: a reasonable minimum degree of cleanliness is required of all, while large plants are rated in terms both of the quantity of material charged into the process and of that emitted. In London, the large power plants like that at Battersea are required to control the emission of smoke and to scrub out sulphur dioxide gas from the stack gases, so that less than 35 p.p.m. escapes—a specification many times more severe than ours.

To-day we have specifications governing the purity of water, milk, food, and various drugs. These have the force of law behind them. Why should we not have the same degree of hygienic protection from air-borne contaminants and from unfavourable working conditions? One often meets with a timid reluctance on the part of some of our colleagues to set limits for pollution. I have no sympathy with such timidity. If you are practising industrial hygiene and refuse to state what conditions should be attained, you are simply evading your issues. If you ask your doctor what régime you should follow and he won't tell you, the chances are that you'll get another doctor. I am fully aware of our great lack of data in establishing, and of the many practical difficulties in attaining, satisfactory standards of air cleanliness, but I insist that standards must be sought if we are to make intelligent progress in this field.

Our opinions vary on the precise figures or limits we use, but most of us now adopt these limits in our routine work. Yet we recognize the limitations of these quantitative figures. I think we should supplement our appraisal of working conditions by personal observation and by every illustrative means at our disposal. The concept of dosage —time × concentration—in all of this work is now generally accepted. In our Atomic Energy Commission plants the environment of the workers, their clothing, and even their persons are inspected and checked thoroughly and carefully, usually one or more times daily. The result has been virtual freedom from the common industrial poisons as well as from the special radiation hazards for which these extra precautions were designed.

In industry the difficult problem is the instilling of a sensible routine to prevent chronic and cumulative occupational disease. Respect for acute poisons like carbon monoxide is much easier to teach and to achieve than respect for repeated—and often not unpleasant—exposure to substances such as benzol vapour. Too often men know of fellow-workers who have seemingly been unaffected by the very conditions we say should be drastically improved. Once management, and then labour, are convinced that something must be done and the new régime instituted, the bad condition can be corrected. But unfortunately an adverse decision in a lawsuit for a compensation case is often the spur to bringing about desired improvements. This is a little like saying that you must be hurt once in an accident in order to avoid future accidents, a concept that is repugnant to the intelligent individual.

It is very rarely necessary to eliminate completely the poison in question, because man's tolerance is such that he

can usually stand a trifling amount of poison, a condition we can generally attain in industry at a reasonable operating cost. If safe conditions cannot be brought about by a change that industry can pay for, then there is usually nothing to be done except to abandon the process entirely.

Some American Standards

We, as engineers, may set up conditions that we deem safe until so proved by the medical records of health in the industry in question. The figures from the A.C.G.I.H. Committee (see Table) are the result of the annual canvassing, by the committee, of persons known to be working with these various substances or to have had experience in their use in industry. Many of them are "guestimates" and are not based upon data scientifically arrived at. They represent what the committee regards as concentrations safe for eight-hour exposures. The persons exposed are presumed to be normal healthy individuals. The limits for gases are given in parts per million by volume, those for toxic dusts are given in milligrams per cubic metre, mineral dusts are measured in millions of particles per cubic foot, and radiations are appraised in the conventional units of roentgens per week. Of these the last are much the newest, and are certain to be revised almost yearly.

Threshold Limit Values for 1953. Adopted at the Meeting of the American Conference of Governmental Industrial Hygienists in Los Angeles in April, 1953

Gases and Vapours

Substance	P.P.M.	Substance	P.P.M.
Acetaldehyde	200	Ethyl silicate	100
Acetic acid	10	Fluorine	0·1
Acetic anhydride	5	Fluorotrichloromethane	1,000
Acetone	1,000	Formaldehyde	5
Acrolein	0·5	Gasoline (petrol)	500
Acrylonitrile	20	Heptane	500
Ammonia	100	Hexane	500
Amyl acetate	200	Hydrogen chloride	5
Isoamyl alcohol	100	Hydrogen cyanide	10
Aniline	5	Hydrogen fluoride	3
Arsine	0·05	Hydrogen selenide	0·05
Benzene (benzol)	35	Hydrogen sulphide	20
Bromine	1	Iodine	1
1,3-Butadiene	1,000	Isophorone	25
n-Butanol	100	Isopropyl alcohol	400
2-Butanone	250	Isopropyl ether	500
n-Butyl acetate	200	Mesityl oxide	50
Butyl cellosolve* (2-butoxy-ethanol)	200	Methanol	200
Carbon dioxide	5,000	Methyl acetate	200
Carbon disulphide	20	Methylal	1,000
Carbon monoxide	100	Methyl bromide	20
Carbon tetrachloride	25	Methyl butanone	100
Cellosolve* (2-ethoxy-ethanol)	200	Methyl cellosolve* (2-meth-oxyethanol)	25
Cellosolve* acetate	100	Methyl cellosolve* acetate	25
Chlorine	1	Methyl chloride	100
Chlorobenzene	75	Methylcyclohexane	500
2-Chlorobutadiene	25	Methylcyclohexanol	100
Chloroform	100	Methylcyclohexanone	100
1-Chloro-1-nitropropane	20	Methyl formate	100
Cresol	5	Methyl iso-butyl ketone	100
Cyclohexane	400	Naphtha (coal tar)	200
Cyclohexanol	100	Naphtha (petroleum)	500
Cyclohexanone	100	Nickel carbonyl	1
Cyclohexene	400	Nitrobenzene	1
Cyclopropane (propene)	400	Nitroethane	100
1-2 Dibromoethane (ethyl-ene dibromide)	25	Nitrogen oxides (other than N_2O)	25
o-Dichlorobenzene	50	Nitroglycerin	0·5
Dichlorodifluoromethane	1,000	Nitromethane	100
1,1-Dichloroethane	100	2-Nitropropane	50
1,2-Dichloroethane (ethyl-ene dichloride)	100	Nitrotoluene	5
1,2-Dichloroethylene	200	Octane	500
Dichloroethyl ether	15	Ozone	1
Dichloromethane	500	Pentane	1,000
Dichloromonofluoro-methane	1,000	Pentanone (methyl propan-one)	200
1,1-Dichloro-1-nitroethane	10	Phenol	5
1,2-Dichloropropane (pro-pylene dichloride)	75	Phosgene	1
Dichlorotetrafluoroethane	1,000	Phosphine	0·05
Diethylamine	25	Phosphorus trichloride	0·5
Dimethylaniline	5	Propyl acetate	200
Dimethyl sulphate	1	Stibine	0·1
Dioxane	100	Stoddard solvent	500
Ethyl acetate	400	Styrene monomer	200
Ethyl alcohol	1,000	Sulphur chloride	1
Ethylamine	25	Sulphur dioxide	10
Ethyl benzene	200	1,1,2,2-Tetrachloroethane	5
Ethyl bromide	200	Tetrachloroethylene	100
Ethyl chloride	1,000	Toluene	200
Ethylene chlorohydrin	5	Toluidine	5
Ethylene oxide	100	1-1-1-Trichloroethane (methyl chloroform)	500
Ethyl ether	400	Trichloroethylene	100
Ethyl formate	100	Turpentine	100
		Vinyl chloride	500
		Xylene	200

Toxic Dust, Fumes, and Mists

Substance	mg. per cu.m.	Substance	mg. per cu.m.
Antimony	0·5	Mercury	0·1
Arsenic	0·5	Pentachloronaphthalene	0·5
Barium	0·5	Pentachlorophenol	0·5
Cadmium	0·1	Phosphorus (yellow)	0·1
Chlorodiphenyl	1	Phosphorus Pentachloride	1
Chromic acid and chromates as CrO_3	0·1	Phosphorus Pentasulphide	1
Cyanide as CN	5	Selenium, as Se	0·1
o,o-Diethyl-*o-p*-nitrophenyl thiophosphate ("parathion")	0·1	Sulphuric acid	1·0
Dinitrotoluene	1·5	Tellurium	0·1
o-Dinitrocresol	0·2	Tetryl	1·5
Fluoride	2·5	Trichloronaphthalene	5
Iron oxide fume	15	Trinitrotoluene	1·5
Lead	0·15	Uranium (soluble compounds)	0·05
Magnesium oxide fume	15	Uranium (insoluble compounds)	0·25
Manganese	6	Zinc oxide fume	15

Mineral Dusts

Substance	MPPCF†	Substance	MPPCF
Alundum	50	Silica:	
Asbestos	5	High (above 50% free SiO_2)	5
Carborundum	50	Medium (5 to 50% free SiO_2)	20
Dust (nuisance, no free silica)	50	Low (below 5% free SiO_2)	50
Mica (below 5% free silica)	20	Slate (below 5% free SiO_2)	50
Portland cement	50	Soapstone (below 5% free SiO_2)	20
Talc	20	Total dust (below 5% free SiO_2)	50

Radiations

Material or Radiation		Material or Radiation	
Gamma (roentgens per week)	0·3	Roentgen (roentgens per week)	0·3

† MPPCF = Millions of particles per cubic foot.
* Trade marked name.

Note.—The above table is reproduced by courtesy of the American Medical Association from the *Archives of Industrial Hygiene and Occupational Medicine*, 1953, **8**, 296. Copyright, 1953, by the American Medical Association.

These figures should be thought of as the lowest limits in zones and not as precise values. They are no more precise than is the toxicological evaluation of various doses of inhalation, as of quartz dust or benzol vapour or carbon monoxide gas. It probably would be more scientific to give them as definite figures ± some number, thus showing the unimportance of slight variations.

It has been said to me often by colleagues, especially by Britons, that this idea of toxic limits is needless, and that better results can be had by watching the health of workers, as by blood or urine examinations. Consider for a moment what Sir Thomas Legge, Chief Medical Inspector of Factories, wrote in his memoirs in 1934 : "If you can bring an influence to bear external to the workman (that is, one over which he can exercise no control) you will be successful; if you cannot or do not, you never will be wholly successful. Practically all industrial lead poisoning is due to the inhalation of dust and fumes; and if you stop their inhalation you will stop the poisoning."

Dr. Alice Hamilton has always supported this plea for prevention rather than cure. It is easier to prevent or control occupational illness (and even accidents) than it is to define the cause accurately.

Control of Noise

Considerable pressure is being brought on us in the U.S.A. to reduce noise in industry, or at least to isolate noisy jobs so that the number of persons exposed to excessive noise is kept to the minimum. Standards of noise levels concerning both frequency and volume are in the making, and are likely to be included in our standards in the reasonably near future. The trend is towards limits or noise levels which permit ordinary conversation.

This is a fruitful field for some good engineering. It is a nice challenge to ingenuity to devise ways of getting around the noise of a rivet hammer, a drop forge, a rock drill, or a spinning-frame or a loom in a textile mill. We wish we knew more about the expected or usual loss of hearing with advancing years in the life of the average worker. Perhaps physicians will supply the data needed.

Considering the speed with which these movements cross the Atlantic we wonder why you in Britain are not more concerned with the noise problem. A damage suit for

impairment to hearing "arising out of and in the course of a man's occupation" is not to be pooh-poohed. We are getting them, why shouldn't you?

Summary

Current methods of industrial insurance in the United States are described, and the value of the insurance companies' inspection schemes is stressed. The origin and development of industrial hygiene services in the United States are recounted.

The role of the industrial hygienist in establishing a safe working environment in industry is emphasized, and threshold limits for various toxic substances, adopted by the American Conference of Governmental Industrial Hygienists in 1953, are listed.

The control of noise in industry is referred to.

LATE RESULTS OF TRANSPLANTATION OF URETERS INTO THE PELVIC COLON*

BY

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After successful implantation of the ureters to the bowel late results will be determined by the type of lesion for which the operation was performed, by the continued integrity or otherwise of the upper urinary tract, and by the effects of chemical imbalance, if any, that may follow the urinary diversion. The nature of the lesion is a dominating factor, particularly in the initial years, when patients who have bladder cancer may die from localized recurrence or distant metastases, and those with genito-urinary tuberculosis may succumb to continued or renewed activity of the disease. When, on the other hand, there has been no constitutional disease, as in cases of trauma or congenital anomalies, results are largely influenced by a continuation of good renal function. I have carried out uretero-colic anastomosis on 162 patients, and all were followed up to April, 1953, or to the time of death. Approximately one-half of these operations had been performed during the previous five years and the remainder over the preceding 15 years. Sixty-nine patients were living in April, 1953, 26 of whom had survived for periods of 6 to 16 years (Table I), and 43 from a few weeks to five years. Six patients now dead lived for periods of 5 to 17 years after operation. It is thus possible to discuss end-results from observation of an adequate number followed over a sufficient time interval. I shall not give full statistical tables, having already done so in a previous communication which dealt with 138 case records (Jacobs, 1952). Relevant data from my series and from the survey of 1,673 patients operated on by 137 surgeons made for the British Association of Urological Surgeons are quoted (Jacobs and Stirling, 1952).

TABLE I.—*Uretero-colic Anastomosis. 26 Patients Living 6 to 16 Years*

Years	No.	Trauma	Congenital	Tuberculous	Contracture	Malignant
16	1	1	—	—	—	—
15	—	—	—	—	—	—
14	—	—	—	—	—	—
13	3	2	1	—	—	—
12	—	—	—	—	—	—
11	2	1	—	1	—	—
10	4	3	—	—	1	—
9	1	—	1	—	—	—
8	3	1	—	2	—	—
7	6	3	—	3	—	—
6	6	3	—	1	1	1
Total	26	14*	2	7	2	1

* 11 of these 14 had a vesico-vaginal fistula.

*Part of a Urology Lecture delivered at the Royal College of Surgeons of England on April 22, 1953. (The indications for operation and the methods of uretero-colic anastomosis used were discussed in the preliminary sections of the paper.)

Malignancy

Because of the increasing use of cystectomy as a method of treating bladder cancer malignant disease has become the most frequent indication for transplanting the ureters. It was the reason for operation on 1,181 (70%) of the B.A.U.S. series. Urinary diversion by itself may be carried out as a palliative measure and was in fact the sole procedure in 476 of these 1,181 patients. The mortality rate was surprisingly high (39.7%). It was obvious that an undetermined number for whom a second-stage cystectomy had been planned succumbed to a preliminary uretero-colic anastomosis, for cystectomy in addition to transplantation on the remaining 705 patients carried a very much lower mortality (15.2%). Uretero-colic anastomosis for malignant disease should not nowadays be associated with such a high mortality rate, and it is a useful method of easing the last months of suffering from bladder cancer when this is associated with intolerable pain and profuse bleedings. It may be difficult to decide whether or not a palliative operation should include cystectomy when obvious spread precludes any hope of a curative procedure, though the bladder is still removable. Thus in a man of 61 with a deeply penetrating sessile umbilicated tumour of only 2 cm. diameter on the left postero-superior wall, the bladder capacity was down to 2 oz. (57 ml.) and he had suffered a half-hourly frequency for nearly a year. Although enlarged glands were palpable alongside the left iliac vessels, the bladder, not being fixed, was removed. The patient died nine months later with a metastatic focus in the head of the right femur and in a lung. Equal relief might have been obtained from transplantation alone, but removal of the bladder made for greater certainty in ensuring against a continuance of vesical strangury as well as of haemorrhage.

A review of late results after transplantation and cystectomy reveals that as a curative measure this radical procedure has not fulfilled the hopes entertained from it. The B.A.U.S. survey showed that among the 705 patients so treated the operative mortality (death within four weeks) was 107, that 216 had failed to survive one year, and that a further 112 had succumbed before the elapse of another two years. Thus 61% of the total had died within three years of operation. Nevertheless evidence is available that cystectomy for early carcinoma with minimal infiltration not going beyond the muscularis can give good end-results, but so also do some of the more conservative measures. Misplaced enthusiasm should not blind us to established facts, which indicate that cystectomy can actually diminish a patient's defence against the malignant spread and that the operation should be employed only on a selective basis. My own series of transplantations for malignancy number 62. Six had extravesical malignant lesions, and 44 of the remainder with bladder cancer had cystectomy in addition to the urinary diversion.

In earlier years, when the tendency was to perform cystectomy for the advanced lesion, I became impressed by the futility of the operation as a curative procedure in such cases, for most of the patients soon developed pelvic recurrence or distal metastases and failed to survive a complete year. Accordingly I now reserve cystectomy for selected cases with multiple non-penetrating tumours of widespread distribution, for the broad-based sessile papillary growths on the lower zones which have not infiltrated, and as a palliative for tumours which have penetrated, when

bleeding as well as pain renders uretero-colic anastomosis by itself insufficient as a measure of relief. I date this policy of selection to the beginning of 1949. Fourteen of the operations were performed before that date; not one of the patients is alive, and only three survived beyond two years; one reached his fourth year and then succumbed to asthma and myocardial failure. Fifteen of the 28 patients operated on from January, 1949, onwards are alive and five of them who had their operations in 1949 have reached or passed four post-operative years with no evidence pointing to local or distant recurrences.* These facts indicate a useful role for uretero-colic anastomosis with cystectomy as a method of treating bladder cancer when selection is made on a basis such as I have suggested; the improbability of obtaining good long-term results in the infiltrating variety of growth is also apparent.

Tuberculous Vesical Contracture

My series includes 52 cases of urinary tuberculosis. In 28 the transplanted ureter was from a kidney which was tubercle-positive, and in 30 an extra-urinary tuberculous focus was clinically demonstrable. The urinary diversion for many in this group was thus a method of relieving the last years and sometimes months of their lives, yet the longevity of these patients so afflicted is sometimes surprising. Of 28 still living 7 have survived for six to eleven years, and 12 for three to five years subsequent to the transplantation. During 1950 I had occasion to transplant 10 patients suffering from urinary tuberculosis. One of them, who had a Coffey transplant, died within a year of operation. The other nine not only survived but continued to live useful lives. Seven of these nine patients had a direct anastomosis by the Nesbit technique, and in four the ureter thus implanted was from a tubercle-positive kidney. These facts show the benefits that can be expected from the unobstructed drainage that generally follows the direct methods of anastomosis. I now, however, prefer to employ Leadbetter's modification of Nesbit's operation, as this method reduces to a minimum, if it does not entirely obviate, the possibility of air or bowel content reflux.

In discussing the tuberculous group special mention must be made of those who have gross hydronephrosis and hydroureter of the remaining kidney. This dilatation may be due to back pressure resulting from the contracted bladder, or to stricture in the ureter not necessarily associated with a bladder contracture, as was the case in a young woman of 22 who had a left nephrectomy in 1948, when the bladder capacity was 14 oz. (400 ml.). After removal of the kidney the urine remained tubercle-positive, but she had no frequency or other bladder symptoms. In 1950, two years after the nephrectomy, she had three attacks of obstructive anuria lasting for periods of 14 to 36 hours. Gross hydronephrosis and hydroureter had developed as a result of a stricture which was located 6 cm. above the ureteric orifice. The bladder capacity remained unimpaired. At operation the lower segment of the ureter was resected to above the level of the stricture and the dilated tube implanted by the end-to-side technique. Twenty-seven months later she was well and leading an active social life.

What I have related about the results of transplantation in urinary tuberculosis confirms that it can be a beneficent procedure for many. It of course does nothing to stay the progress of the disease, but it can in some instances prevent the progressive destruction of the patient's solitary functioning kidney, and for those with severe bladder contracture the relief of the persistent frequency or incontinence that follows the urinary diversion is immense.

Trauma, Non-tuberculous Contracture, Anomalies

It is convenient to consider together the results of urinary diversion for trauma, non-tuberculous contracture, and congenital anomalies, for these lesions are in themselves non-killing ones, though health may be impaired by long-standing urinary infection which is often associated with dilatation of the upper urinary tract. My total patients in the three groups number 48. In the B.A.U.S. series these conditions were together the reason for operation in 16.7% of the total, the operation carrying a 10% mortality for trauma, 11.3% for congenital anomalies, and 13.3% for bladder contracture. The life tables showed that 79.5% of those operated on for congenital anomalies had an expectation of life of three years or more and 76.6% of five years or more, a difference in the two years of 2.9%. A combined computation for trauma and contracture, on the other hand, revealed that a life expectation of three or more years was applicable to only 62.5% and of five years or more to 55.4%, the drop in the two years amounting to 7%. It is opportune, therefore, at this point to examine possible causes of late morbidity and mortality, uninfluenced by the actual lesion for which the urinary diversion was performed.

Morbidity and Electrolyte Imbalance

In my series 23 patients belonging to the above-mentioned three groups were still living in April, 1953. Their survival period to that date was up to 5 years in six, 5 to 10 years in eleven, 11 to 16 years in six. The longest survivor so far was a patient, now deceased, who died after an operation for malignant pancreas 17 years subsequent to transplantation for vesico-vaginal fistula.

In January, 1953, a lad of 17, whose ureters I had transplanted six years previously, died. The established cause of death was typical of what, in like circumstances, may follow many years after operation. He first came under my care in 1947, when he was 11 years old. He is one of the two patients on whom I have performed urinary diversion subsequent to a ruptured urethra, which in his case had been sustained three years earlier as a result of being run over. He had been left with a permanent suprapubic tube. Transplantation by the Coffey I method was performed after efforts to re-establish the urethral lumen had failed and when both ureters had already become grossly dilated. In June, 1952, five years after the uretero-colic anastomosis, he was sent back to hospital because a visible suprapubic swelling had developed. Almost 20 oz. (570 ml.) opaque fluid was aspirated from his bladder by needle and syringe. This fluid contained mononuclear cells and abundant spermatozoa. Six months later (January, 1953) he was again admitted, as the suprapubic swelling had reappeared and an approximately similar quantity of spermatic fluid was once more evacuated from his bladder. At this stage it was decided to carry out a cystectomy. Intravenous urography had shown a persistence of the upper urinary tract dilatation and the blood urea was 80 mg. per 100 ml. There was no clinical or biochemical evidence of hyperchloraemic acidosis (Table II). On the evening before the day designated for operation he suddenly became febrile. The high temperature with malaise continued into the next day and the operation was cancelled. He died that evening, after a sudden convulsive seizure. Post-mortem examination showed gross bilateral hydroureters and hydronephrosis, with marked infection on the left side.

TABLE II.—*Blood Chemistry 6 Years after Transplantation (2 Days Before Death)*

Blood urea	80 mg. per 100 ml.
CO_2 combining power	56·7 ml. CO_2 per 100 ml.
Plasma chlorides	97 mEq per litre
Plasma sodium	146 " " "
Serum potassium	5 " " "

Although long survival in apparent good health is not uncommon in spite of an impaired upper urinary tract, it is incontestable that the development of dilatation and infection and their aggravation when such existed before operation are fundamental factors influencing morbidity and mortality. To what extent, then, is well-being affected by electrolyte changes? The B.A.U.S. survey showed that almost 50% of patients were in electrolyte imbalance at some stage in their post-operative career, and it is now

*These five patients have now entered their sixth post-operative year.

unquestionable that selective absorption from the bowel can result in hyperchloraemic acidosis and other chemical disturbances.* The capacity to deal with this seems, however, to be closely related to renal function. The analysis of the B.A.U.S. series and of my own revealed that 75% of those whose blood chemistry findings indicated hyperchloraemic acidosis had an elevated blood urea as well as objective evidence of renal impairment on excretion urography. It also showed that only 20% of that number exhibited symptoms of chemical imbalance and that almost without exception chemical imbalance with symptoms was associated with a raised blood urea and dilatation of the upper urinary tract.

I have recounted the mode of death which rapidly ensued after six years of well-being when there was no evidence of hyperchloraemic acidosis or even of acidosis, and for which a sudden overwhelming renal infection seems to have been responsible. Recently another patient died, 11 years and 6 months after transplantation for vesico-vaginal fistula. The Coffey technique had been used and there was no renal or ureteral dilatation at the time of operation. Just over a year before death biochemical examination had shown an elevated plasma chloride with a lowered alkali reserve (Table III). There was then well-marked dilatation in the upper urinary tract, but the blood urea was only 28 mg. per 100 ml. She was working as an assistant hotel cook and her only complaint was that she had become very stout. In December, 1952, she was admitted to another hospital in a semicomatose condition, having been unwell for the previous 10 days, suffering from mild rigors and pain in both renal areas. Her blood urea was 198 mg. per 100 ml., but plasma chlorides were actually lower than a year previously. Acidosis was confirmed, the alkali reserve having further fallen. She failed to respond to alkaline therapy and died nine days after admission. Four days before death she exhibited definite hyperchloraemic acidosis though the urine output had risen from 7 to over 70 oz. (200 to over 2,000 ml.) a day. Post-mortem examination showed bilateral renal dilatation, moderate on the right, marked on the left, the kidney on that side having only a strip of functioning tissue, and the left uretero-colic anastomosis stenosed though patent. The histological picture was of advanced pyelonephritis.

TABLE III.—*Blood Biochemistry after Transplantation of Ureters in May, 1941*

	June, 1951	Nov. 19, 1952	Nov. 26, 1952
Blood urea ..	28 mg./100 ml.	198 mg./100 ml.	196 mg./100 ml.
CO_2 combining power	48·1 ml. CO_2/100 ml.	35 ml. CO_2/100 ml.	21 ml. CO_2/100 ml.
Plasma chlorides ..	109·4 mEq/litre	103 mEq/litre	117 mEq/litre
Plasma sodium ..	142 "		
Serum potassium ..	5·5 "		3·1 "

The severe electrolyte imbalance which finally developed in the above instance was associated with gross renal damage and uraemia. I can find no evidence of any patient in my series whose death could be attributed solely to chemical imbalance. Indeed, I have had but few incidents in the past three years—during which I have been on a constant lookout for them—of serious disturbances arising from this cause, and such as have been encountered without marked renal damage have been readily corrected by appropriate infusion therapy, alkalis, and an in-dwelling rectal tube. Less severe symptoms, such as anorexia, thirst, salty taste, and polydipsia, are generally improved by regular evacuation of urine, salt limitation, and alkalis. I therefore deprecate transplanting the ureters into a segregated loop of bowel as a precaution against the onset of electrolyte disturbances. This measure will not eliminate the possibility of subsequent renal damage due to faulty union between ureter and bowel, and the wet enterostomy or colostomy which the procedure necessitates is a negation of one of the main objectives of ureteral transplantation—namely, to restore the patient to a normal-like way of life. It is as well to dispense with the uretero-colic anastomosis and divert the urine by ureterostomy.

*The reader is referred to the important contributions on the subject of chemical imbalance after uretero-colic anastomosis, published in the *British Journal of Urology*, 1952, **24**, pp. 302, 307, 313, 317.

Summary and Conclusions

The results of carrying out uretero-colic anastomosis on 162 patients are analysed.

It is evident that, provided the lesion for which urinary diversion is performed is not one which itself predisposes to ill-health and eventual mortality, transplantation of the ureters to the bowel can be followed by well-being and expectation of a long life. This in great measure is influenced by the renal status, which in turn is largely dependent on the success of the actual anastomosis. The union between ureter and bowel must therefore be accomplished with as high a degree of technical perfection as possible.

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PSYCHOPATHIC STATES AND ATTEMPTED SUICIDE

BY

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Suicidal attempts are medical emergencies which the general practitioner and the hospital surgeon and physician alike have to meet, since in many instances it is found necessary to remove the suicidal individual from his home to hospital for resuscitation or repair. When his physical treatment has been completed it often happens that he appears remarkably normal : if, as he may do, he then insists on his discharge from hospital, grounds for detaining him longer may not be found. There is evidently a type of suicidal attempt, dangerous enough to need medical intervention, of which the more obviously morbid mental accompaniments are transient. In some centres these cases are not referred to psychiatrists and pass quickly from observation ; this apparently is one of the reasons why a relatively common phenomenon has been so little investigated. Experience over some years in a general hospital where all cases of attempted suicide are examined by a psychiatrist has shown that the large majority of these " birds of passage " are suffering from psychopathic states.

Henderson (1939), focusing attention on the suicidal proclivities of psychopathic individuals, gave a description of the situation which is admirable in its emphasis on the peculiar clinical features and the social implications. His lead has, however, not been followed ; and it is thought that a detailed survey of a group of such cases might now promote their more general recognition and stimulate further research, particularly into their aetiology.

There are few papers in the literature which indicate the proportion of cases of attempted suicide which may be attributed to psychopathic states. Dahlgren (1945), in a follow-up study of 237 cases of attempted suicide, gave 12.2% (26 men, 3 women) the diagnosis of psychopathia ; but his clinical material was unsatisfactory, being

so heterogeneous as to include morons and apparently also cases possibly based on cerebral trauma or infection. Stengel (1952) reported an incidence of 13.6% (15 men, 6 women) in a series of 138 cases similarly investigated by follow-up, and commented that his group was not representative of the suicidal attempts made in the general population. It is probable that the percentages quoted are too low.

General Characteristics of the Cases

In a series of 200 consecutive cases of attempted suicide admitted to a general hospital in the years 1950–2 and personally observed, 50 (25%) were given initially the diagnosis of psychopathic state. Further investigation has shown that in eight of these cases the diagnosis was perhaps disputable: three were difficult to assess, being foreigners, while in the other five the degree of instability revealed might be held to be insufficient to justify the diagnosis and to merit rather a label of hysterical or schizoid personality. In 42 cases, therefore, the specificity was not in doubt, and these have been investigated in detail.

The sex, age, and marital state of these 42 individuals are detailed in Table I.

TABLE I

Age Group	Male	Female	Total	Marital State	Male	Female	Total
0–19 years	1	—	1	Single	8	4	12
20–29 ,,	7	7	14	Married	12	7	19
30–39 ,,	5	5	10	Widow(er)	—	2	2
40–49 ,,	7	4	11	Separated	4	3	7
50+	5	1	6	Divorced	1	1	2
Total ..	25	17	42	Total	25	17	42

Family Histories

In 28 (66.7%) of the cases there was a family history of psychiatric abnormalities, which were manifested in 78 of their relatives, 42 of these relatives being alcoholics. Six (14.3%) of the cases gave a family history of suicide, six of their relatives having attempted suicide, two successfully. Two cases had a family history of homicide. In 15 (35.7%) cases a history of mental illness, and in 16 (38.1%) cases a history of alcoholism (in six cases of both) was obtained in first degree relatives. There is apparently a significant relationship between psychopathic states and a family history of alcoholism.

"*Broken Homes.*"—In 31 (73.8%) cases the patients had, in their first 16 years, been deprived of a normal life with their parents. Some of the details are given in Table II.

TABLE II

	Male	Female	Total
Broken home	17	14	31
Illegitimate	2	2	4
Permanent loss of father	6	8	14
,, ,, ,, mother	4	5	9
,, ,, ,, both parents ..	1	3	4
Alcoholism of father	8	4	12
,, ,, mother	4	4	8
,, ,, both parents	—	4	4

One man and six women had lost their fathers in the first five years of their lives, and one man and two women their mothers. Figures can, of course, indicate only very crudely some items in these childhood situations. They are, however, sufficiently striking: parental alcoholism occurred in 38.1% of the cases, loss of the father in 33.3%, loss of the mother in 21.4%.

The importance of a broken home in the genesis of the suicidal acts of this group seems undoubted, but we have only the roughest clues as yet about how this factor operates. We do not know whether an absence or distortion of parental influences is the more traumatic, nor which parent may be the more essential; nor do we know the ages at which the greatest harm may be done. The broad implications of these findings have been discussed elsewhere (Batchelor and Napier, 1953a).

Previous Personal Characteristics

This suicidal group was typical of the psychopathic states as a whole. The majority were aggressive, the minority passive and inadequate. Reactions primarily of aggression were usual in the former, reactions primarily of evasion in the latter, but these correspondences were not absolute. All had shown persistent maladjustment, starting in childhood or adolescence, and all were complained of as unpredictable and totally unreliable in word and deed. One-third had previously received psychiatric treatment.

Impulsiveness is highly characteristic of the psychopath who attempts suicide. With equal haste, on the spur of the moment and without heed to the future, he may accept or reject serious social obligations and the most intimate personal ties, leave his home, throw up a profitable job, or act with physical violence. Explosive outbursts of temper, threats, and assault were very commonly reported. Many were described as bullying, vindictive, jealous, cantankerous, trouble-making. Many had been actively cruel to their spouses or to their children.

In this group one often encountered individuals who were egotistical, cold, friendless. Many were morbidly touchy or secretive, with sensitive ideas of reference. Several realized that, unable to tolerate constraint of any kind, they were more content and safer when left alone. A few had had paranoid episodes. Mood swings were common, and some gave a history of neurotic symptoms when under stress.

Exhibitionistic and narcissistic traits were also commonly seen, expressed in endless demands for attention, flamboyant dress or hair styles, fantastic lying, masquerading, tattooing. One woman had burnt on her arm with cigarettes the initials of her lovers. An exaggerated narcissism was in some cases associated with defective personal hygiene.

The majority were maladjusted sexually. Five men and 10 women were heterosexually promiscuous. Eight men and one woman showed homosexual trends, at least one-third of these being practising homosexuals. Five women had had illegitimate children.

Fourteen men and six women gave a history of alcoholism. Five men were drug addicts. Nine men and 10 women had made a total of 29 previous suicidal attempts.

The psychopath is typically a restless Ishmael. Almost half the cases had been truants in earlier years: some individuals still had recurrent overpowering urges to go off alone. Usually there was a history of numerous futile changes of occupation or of long periods of unemployment. In only six cases (one man, five women) was the work record satisfactory.

Religion played very little part in these people's lives. The majority expressed a belief in a personal God, but less than half believed in some sort of immortality or after-life. Three-quarters of the group admitted that they knew attempted suicide was an offence against the law: many had previously been charged on account of suicidal attempts. No evidence was found, however, to show that legal sanctions had acted as a deterrent: the suicidal individual gave no thought to the matter at the time of his act, or did not care, or expected to be dead.

Thirteen men had police records. The commonest offences were theft, housebreaking, assault, and drunkenness with disorderly behaviour; there were also convictions for sexual offences, fraud, begging, truancy, and arson. Two women had police records, convicted of theft and drunkenness. Other individuals were known to the police, or had committed petty thefts which had not been reported. At least five of the men were chronic gamblers.

The social incompetence of the group is further illustrated by their low social status and living conditions, their unemployment, poverty, and isolation, details of which are given below.

Social Data

Table III gives an analysis of the social conditions of the group. Ten individuals suffered from overcrowding, and six others lacked privacy in their living conditions.

TABLE III

	Male	Female	Total
Present social class:			
I. Professional	—	1	1
II. Intermediate between I and III	1	—	1
III. Skilled workers	2	1	3
IV. Intermediate between III and V	6	1	7
V. Unskilled workers	16	14	30
Present employment status:			
Employed (including domestic duties)	10	10	20
Unemployed, but fit	9	5	14
„ because unfit	6	2	8
Financial state:			
Adequate	7	9	16
Financial stress	9	6	15
Subsistence level	7	2	9
Below subsistence level	2	—	2
Housing and living conditions:			
Slum	8	7	15
Artisan	13	8	21
Middle-income group	3	2	5
Not known	1	—	1
Living with spouse or lover	12	8	20
„ „ parent(s)	5	5	10
„ „ other relative	1	1	2
„ in lodging-house or hostel	6	2	8
„ alone	1	1	2

Social Circulation and Mobility.—Of the group, 35 were born in Scotland: of these, 17 were born in Edinburgh. Nine were rural bred. A fall in social status had occurred in 19 (45.2%) cases—a circumstance which could easily be correlated with their personality defects. In the past 12 months 14 had changed the localities they lived in (some had made numerous changes): in six cases these moves were local.

Group Membership (including Religious Affiliations).—Among the 42 individuals were 28 Protestants, 10 Roman Catholics, a Salvationist, a Jehovah's Witness, a pantheist, and an atheist. Eight of the Catholics had lapsed. Only three individuals were even irregularly church-going. Four men were loosely affiliated to one of the following organized non-religious groups: Freemasons, Buffaloes, Alcoholics Anonymous, and a camera club. Two women were affiliated to groups, but again only barely so: one was a lapsing member of Alcoholics Anonymous, and another a quarrelsome performer in an amateur theatrical company.

Physical State

The physical state of 17 (68%) of the men was satisfactory. The following were the diagnoses of the eight who were ill: arteriosclerosis (2), osteomyelitis of spine, carcinoma of colon, peptic ulcer, mild bronchitis, disabling inguinal hernia, gonorrhoea. Those complaining of fatigue were physically ill.

The physical state of eight (47.1%) of the women was satisfactory. Three were physically ill, suffering from occupational dermatitis of hands and face, tabes dorsalis, gonorrhoea. Six others were suffering from debility or marked fatigue. In only two cases was the suicidal attempt closely related in time to menstruation.

Setting of the Suicidal Attempts

Nearly one-third of the cases reported no nervous symptoms in the period shortly before their suicidal attempts. The remainder complained of one or more of the following: increased irritability, tension, restlessness, fatigue, anxiety, depression, insomnia; or had somatic symptoms such as headache or head pains, flatulence, and "fibrositis." Some had an access of ideas of reference and believed that everyone and everything were against them. It is rather striking that 15 (60%) of the men and 8 (47.1%) of the women were not under the care of their own doctors at the time of their suicidal attempts. Only one individual was receiving psychiatric treatment.

In 23 (54.8%) cases the individual gave no warning, either immediate or remote, of his suicidal intentions. Six men and six women had lately made suicidal threats: Four of these and two other men and one other woman had made many suicidal threats in recent years. The husband of one woman said, "She threatens suicide whenever she runs out of cigarettes"; of another it was said, "I couldn't tell you of all the times she has threatened to take her life."

Three men prefaced their self-injury by assaults on their wives. In two of these cases the assault was accompanied by threats of murder, and in the third case a police charge was brought. A fourth man had recently threatened to murder his wife. Five other men had histories of serious assaultive behaviour at home. One woman attempted to gas the man with whom she was living and then herself. Another woman attempted to strangle her homosexual partner. A third woman assaulted her stepdaughter. These facts make obvious the close relationship of homicidal to suicidal trends in this group.

The Suicidal Attempts

How Long Contemplated?—Table IV shows that 26 (61.9%) of these suicidal attempts were impulsive. The majority of those who had been contemplating the act for

TABLE IV

	Male	Female	Total
Impulsive	15	11	26
Contemplated for hours	2	3	5
„ „ days	1	1	2
„ „ longer	5	1	6
Information withheld	2	1	3

longer said that their suicidal thoughts had been intermittent. One man claimed that he had been brooding over his act for two years. Nearly identical statements about their attempts were made by many of the group: "I took them on the spur of the moment"; "I didn't think at all." It is interesting that some described their acts in the same phrases as an epileptic might use to recount his fit: "It came on us all of a sudden"; "It just came over me."

Immediate Stimulus.—The specificity of the precipitants in this series is impressive: in 85.7% the immediate stimulus was either a personal quarrel or imminent retribution, the former about twice as commonly as the latter (Table V).

TABLE V

	Male	Female	Total	
A quarrel:				
With spouse	7	5	12	25
„ lover	4	6	10	
„ other person	2	1	3	
Environmental sanctions:				
Threat of arrest or trial	5	2	7	11
„ „ mental hospital admission	—	2	2	
Detention in gaol	2	—	2	
Nil	3	1	4	
Not known	2	—	2	

The quarrel in the cases of four men and two women was over a jilting. In two cases the unexpected loss of a job and in two others the refusal of expected financial assistance contributed materially to a state of irritable discontent.

Drunk or Sober.—Eleven men and one woman were under the influence of alcohol at the time of their suicidal attempts. Enough had been taken to diminish their self-control, but not enough to render them amnesic.

Timing and Situation.—Half of the attempts (male 12, female 9) took place between 7 p.m. and midnight—at a time, that is, when the factors of fatigue and intoxication were most often operative, and the individual was apt to return home quarrelsome to a critical reception. April,

May, and June were the most favoured months. Twenty-seven of the attempts were made in the individual's own bedroom, kitchen, or living-room. Other sites selected were : (*a*) in own house—lavatory (2), bathroom (1); and (*b*) elsewhere—in the street (3), police cell (2), acquaintance's house, train, railway station, cinema, public park, hill-top, and house under construction.

Method.—Poisoning, a passive method, was chosen by 38 (90.5%) (Table VI). "Other poisons" employed were methylated spirits, digitalis, bromide and chloral mixture, "izal," potassium cyanide, tincture of opium (the last two combined).

TABLE VI.—*Method Adopted*

	Male	Female	Total
Poisoning:			
Barbiturate	10	13	23 }
Aspirin	4	1	5 }
Coal gas	4	1	5 } 38
Other	3	2	5 }
Cutting	3	—	3
Hanging	1	—	1

Reasons for Choice of Method.—In the majority of psychopathic cases availability appears to be the paramount factor determining choice of method. Barbiturates can now be found in a great many homes, coal gas is usually on tap, and aspirins may be bought for the purpose. The subject may report that he used the method nearest to hand : "I saw the box on the sideboard"; "I put my hand in my pocket and felt them there." Another determinant is the expected painlessness of the mode of exit : feelings of guilt do not compel the psychopath to inflict maximum suffering on himself, and he may confess to his hedonism—"I thought I'd sleep away nicely." There is no doubt that in some cases also deeper compulsions operate, and are expressed particularly by those who state, "I couldn't think of any other way." It is likely that the predominance of passive oral methods can in part at least be ascribed to the immaturity of the personalities and the incidence of early deprivations in this group. Direct suggestion seems only occasionally to be a factor.

Loss of Consciousness; Amnesia.—Eighteen men and 14 women lost consciousness as a result of their attempts. It was surprising that none claimed an amnesia for the act itself, since the intense emotional perturbation usually associated with it might have been expected in some cases to cause a clouding of consciousness.

Attitude after the Attempt.—The considerable number who denied their suicidal intentions is noteworthy (Table VII). Some of these admitted to having had feelings of hopelessness. Others stated that they had just wanted to

TABLE VII

	Male	Female	Total
Suicidal intention admitted freely	11	6	17
" " " partially	—	1	1
" " " ; later denied	3	1	4
" " denied; later admitted	2	2	4
" " denied	8	6	14
"Don't know"	1	1	2

sleep or to get some release: "It suddenly dawned on me that I could sleep and sleep and forget it all." Eleven individuals were vacillating, evasive, or confused about their acts : "I don't think I wanted to die actually"; "I don't know what I meant"; "Could I do this by mistake?" Attitudes may even be changed during the course of an interview. Remorse is hardly ever expressed.

Estimation of its Seriousness.—It is impossible to give a precise estimate of the seriousness of each of these attempts. One cannot gauge their gravity simply by reference to the means employed, since in many cases the rapidity with which the act was perpetrated marred its efficiency. Also, amongst this group of people one cannot believe all those who claim that they have been in earnest nor all those who deny it; while others seem to know no more clearly than an observer what they had intended. It is certain, however, that the majority of these people had done things which were highly dangerous to themselves; and that in at least one-third of the cases the act was carried out with great determination. The severest difficulty in assessment arises in those cases in which the individual has felt that he must escape from a situation which has become intolerable to him: the duration of his proposed absence may be problematical. In perhaps a handful of cases in this series the suicidal drive may have been minimal.

Motives

As are probably all suicidal acts, these attempted suicides were complexly determined. Certain psychopathological trends have been isolated, and are discussed below. This atomistic arrangement, while it assists clarity in presentation, does some violence to the intimate interrelationships of the factors concerned and perhaps suggests that these acts are determined at a more conscious level than is in fact the case. The trends discussed here may be compared with the motives discerned in a group of 40 old people who made suicidal attempts (Batchelor and Napier, 1953b).

Hate.—The commonest precipitant of these attempts was a quarrel, mobilizing intense feelings of hatred for a person previously ambivalently loved and hated. In several cases it was quite obvious that the suicidal individual had felt the provocation to murder. In more than one-quarter of the cases motives of spite, pique, and revenge were apparent. The suicidal act may be consciously intended as the most bitter censure. One man's farewell note expressed this succinctly : "Dear Dad, this is Good-bye. You haven't been much of a Dad to me.—Johnny." The aggrieved individual may turn the tables on the hated person by attempting to lay a death at his door and so render him a murderer. For example, a young woman, believing herself jilted, went to her lover's house and gassed herself while lying on his bed. In the case of the morbidly narcissistic individual, a wound to self-esteem which would appear to the average person innocuous may be sufficient to precipitate a suicidal attempt. The culminating incident which provoked a youth to attempt to poison himself with drugs belonging to his mother was her order, which humiliated him before others, to take his cap off in the house.

Evasion.—These individuals often themselves recognized the evasive nature of their reactions. "When I get into a complete jam this sort of thing occurs to me"; "I didn't want to face it." Of alternative modes of escape, alcohol was frequently used. One man, who previously had had a fugue lasting two days immediately after being jilted, made his determined suicidal attempt immediately after he had experienced a similar disappointment. Closely related to fugues, though not associated with amnesia, are the impulsive journeys which psychopathic individuals often embark on. More than one of these people had been planning emigration as a solution of his difficulties; one, when his suicidal attempt had failed, announced his intention of entering a monastery.

Identification with a Dead Person.—Four men had identified themselves with their dead fathers: one of these parents had himself attempted suicide. One of these four men had in addition identified himself with a dead male friend, to whom he had been homosexually attached. Three men and one woman had identified themselves with their dead mothers. The suicidal individual may speak openly of wanting to rejoin the dead person.

Experimentation and the Dramatic Demonstration of Omnipotence.—Defiantly rejecting an unappreciative world, the malcontent may close his account in the most individualistic manner possible to him—by a murder of the self, by the self, for the self. The suicidal attempt in such cases may be deliberately, and romantically, staged. One of this group, after being jilted, climbed the Calton Hill at midnight, placed the girl's Bible beside him, and so slashed his wrist that he nearly died: he was sustained by an

exalted feeling of omnipotence as he looked down on the city of his nurture and the people he despised. Another blasé young man, before poisoning himself, left a long letter in which he took a sophisticated farewell of the world: "Sidereal Time marks out the minute fragment of my life against a canopy of stars. I have chosen to shorten it. I am my own executioner. . . . I join Mayakovsky." The suicidal act is in such cases ecstatic. Closely allied to dramatic and erotic motives is the factor of experimentation. The excitement of danger clearly held a vivid appeal for these two men and for some others in this group. Their morbid tensions were geared to it. Feeling different and estranged from their fellow men, one can understand that they were the more ready for a crucial experiment to discover where they belonged. A suicidal attempt may be a form of initiation, a test of manhood.

Manipulation of the Environment.—While efforts to dominate and to punish the environment were clearly evident in the suicidal attempts prompted by frustration, spite, and revenge, efforts deliberately to cajole it were identified in a small minority of the cases. One woman stated later, "I thought it would change my husband"; a man admitted, "I just took the gas simply to frighten my wife; I didn't think it would have gone so far." These two acts may have been bungled gestures, and in any series of attempted suicides there are probably some such cases.

Fears.—Phobias were less common than well-founded apprehensions. In addition to those afraid of social consequences, two men justifiably feared the outcome of their physical illnesses, and one woman an illegitimate pregnancy. Two men and two women feared insanity. Two other individuals had hypochondriacal bodily complaints.

Loneliness.—This factor is more closely related to the suicidal individual's advancing age than to his psychopathic reaction. It strongly influenced an illegitimate girl aged 20, and three individuals past middle age.

Guilt.—In only one case did guilt seem prominently to be a factor. It may have been a factor overlooked in other cases; but one has the strong impression that it is an element of little importance in the genesis of psychopathic suicidal attempts.

Frustration Reactions.—It has been proposed (Batchelor, 1954) that the concept of an acute frustration reaction is applicable to many of these impulsive acts. This concept complements and does not minimize the importance of the psychopathological factors described above.

Disposals

In 35 (83.3%) cases the patients were discharged from the general hospital within two weeks, 22 being detained in the observation ward for a week or less and 13 for one to two weeks; three were detained for two to three weeks, and four for a longer period. Of the 36 (85.7%) discharged home, 16 attended for further out-patient psychiatric investigation and treatment. Three men and three women were transferred to a mental hospital: only one of these was under certificate.

Only one individual has committed suicide in the year following the suicidal attempt.

Discussion

When one compares the suicidal acts of psychopaths with those of individuals suffering from, for example, depressive psychoses, one is impressed with how much in the former is on the surface. Many have obvious environmental precipitants, aggression is more nakedly displayed, frictions in personal relationships are more easily identified, and, while both intrapsychic and external conflicts are undoubtedly operative, the latter are of considerable significance.

Motives of guilt and self-punishment are less potent in psychopathic cases; and for this reason alone these suicidal attempts would tend to be less fatal. Poisoning is more easily treated than many other injuries, and the act—following, for example, a quarrel at home—may be perpetrated in circumstances which facilitate its detection. The flood-marks of the individual's rage or panic fear may therefore be soon removed, and his quick recovery of poise may belie the intensity of his recent emotional storm. The nearer in time that one stands to these acts the more seriously is one apt to estimate them, while in a retrospect one may be aware less of the act itself and more of its consequences. Impressed in his follow-up study by the modification of the social situation which the individual's suicidal act may effect, Stengel (1952) has drawn particular attention to the social element in suicidal attempts, and, considering these acts as unconsciously directed towards a re-establishment of human relationships as well as towards death, has emphasized their "appeal character."

That nearly half the cases had made previous suicidal attempts might be held to support the hypothesis of their "appeal character." Appeals to others for help might equally be repeated because of their previous failure or because of their learned effectiveness. But we should also link the repetitiveness of these acts with their outstanding quality, which is explosiveness. We are then strongly reminded of the behaviour of the epileptic. There are other correspondences: the psychopath's suicidal attempt, like the epileptic's fit, may come suddenly or be prefaced by a period of increasing tension and irritability; it may be precipitated by emotional frustration, alcoholism, or fatigue; some clouding of consciousness may accompany it (Henderson, 1939); and, while in some cases it may be followed by a period of collapse or of disturbed rather random behaviour, recovery is usually remarkably rapid. The suicidal attempt of the psychopath might often be fairly accurately described as a suicidal fit.

Like the child, the psychopath is self-centred, instinct-driven, and lives in the present; his wishes and his expectations approximate; he is deficient in self-control and natively destructive. His suicidal acts also bear a strong resemblance to those committed by children. Many writers, from Maudsley (1895) to Despert (1952), have drawn attention to the fact that children may embark on self-injury on sudden impulse, in a setting where emotional depression is often not obvious; have instanced motives such as jealousy, revenge, identification with a dead person, and fear of punishment (in the adolescents also disillusion and experimentation); and have emphasized that the precipitants of these acts may appear trivial. Though the evidence is less abundant and established, there is also some suggestion at least of a resemblance between the suicidal acts of psychopaths and those of primitive peoples.

It is likely that even under the most favourable conditions the number of these acts which could be forestalled would be small, since usually the self-injury follows its stimulus so quickly or unexpectedly. Prophylaxis must begin therefore in childhood, when, or before, the first indications of emotional instability or social maladaptation or delinquency become apparent; and it must deal with such severely traumatic factors as parental alcoholism. But here we are gravelled by lack of information: we need to know far more than we do about heredity, for example; about the pathophysiological relationships between psychopathy and epilepsy; about the structure and effects of the "broken home" situation; about the unconscious factors which go to produce criminal behaviour; about impulse and its control.

We are obviously confronted by complex problems. We have to work against a background of social changes outside our effective control, of which the phenomena we are treating are to some extent at least reflections. And we have to deal with a situation which, though it may be more common than formerly, is certainly not new: centuries ago a discontented man was defined as "one that is falne out with the world and will be revenged on himselfe."

Summary

The cases of 25 men and 17 women suffering from psychopathic states, who attempted suicide and were

admitted to a general hospital, have been investigated in detail from psychiatric and social aspects. The sample suggests that at least one-fifth of attempted suicides belong to this group.

A family history of psychiatric abnormality was obtained in 67% and of suicide in 14% of the cases.

Of the group 74% came from "broken homes." Previous suicidal attempts had been made by 45%. The majority of the patients were in the first half of life, and all had shown persistent social maladjustment; most typically they were impulsive, aggressive, restless, egocentric, and affectionless; many gave histories of unemployment, crime, sexual maladjustment, alcoholism, drug addiction. 71% were in the lowest social class.

The physical state was satisfactory in 60%.

Nearly one-third had not been complaining of nervous symptoms, and one-half were not under the care of a doctor at the time of their suicidal attempts. Homicidal trends were in several cases obvious. The majority of the suicidal attempts were impulsive, precipitated by a personal quarrel or the threat of retribution. Alcohol and fatigue were significant factors. Poisoning was chosen by 91%. Many were confused about their real intentions.

The psychopathology of these acts is described and the following motives are considered most significant: hate, evasion, identification with a dead person, fears, experimentation, the demonstration of omnipotence, and manipulation of the environment.

Of the group 86% were discharged home.

The difficulty of judging the seriousness of these attempts is discussed, their resemblances to the episodically disturbed behaviour of the epileptic and to the suicidal attempts of children and primitives are briefly considered, and the need for further research and its possible directions are indicated.

I am grateful to Professor Sir David Henderson for his criticism and advice, and to Dr. J. K. Slater for permission to study these cases in his wards at the Edinburgh Royal Infirmary. I am also much obliged to Miss Margaret B. Napier, senior psychiatric social worker at the Royal Edinburgh Hospital, for her assistance in obtaining data from the families of these patients

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The decision of the Department of Health for Scotland to combine a publicity drive against tuberculosis with mass radiography surveys in selected areas is largely based on experience at Greenock. Here, last autumn, one-fifth of the adult population (13,537) came forward for *x*-ray examination, and as a result 58 previously unknown active cases of pulmonary tuberculosis were discovered—a yield of 4.3 per 1,000 of those examined. A further 93 patients (6.9 per 1,000) were placed under surveillance. It is pointed out that a far higher proportion of the population would have been *x*-rayed had not the radiography units been previously committed to routine work such as the examination of National Service men. The Department sums up the Greenock experience in these words: "The case for a change in emphasis in favour of mass *x*-ray drives is stronger when the incidence of active tuberculosis discovered in Greenock is taken into account."

MECKEL'S DIVERTICULUM AS AN ABDOMINAL EMERGENCY

BY

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"Meckel's diverticulum is frequently suspected, often looked for, and seldom found" (Charles Mayo, 1933). This vestigial structure may make its presence known dramatically, and the diagnosis is seldom made preoperatively. Few surgeons have extensive experience of the condition, and this review is based on a small series of five cases.

Diverticula may be found anywhere in the gastrointestinal tract. Most of them are acquired and have their origin at the point of penetration of the muscle coat by the mesenteric vessels (Edwards, 1939). Among the congenital diverticula are the rare caecal diverticula and Meckel's diverticulum. Meckel's diverticulum is a remnant of the foetal vitello-intestinal duct, which in the foetus forms a channel between the midgut and the yolk sac. As distinct from acquired diverticula it is a true diverticulum, consisting of all the layers of the intestinal wall.

Pathology

Remnants of the vitello-intestinal duct may be encountered in the form of (1) a persistent duct from the ileum to the umbilicus with secretion of mucus, or even faecal matter; (2) a short umbilical sinus or an umbilical polyp; (3) a vitello-intestinal cyst; (4) a fibrous band from the umbilicus to a Meckel's diverticulum; or (5) the band may be attached to intestine, mesentery, or another viscus, commonly in the pelvis; (6) a solitary Meckel's diverticulum is the remnant most often found. An artery may be contained in the above band—namely, the vitelline artery.

The different intestinal diverticula were classified in 1812 by Johann Friedrich Meckel (the younger); he gave a full description of the solitary diverticulum of the ileum which bears his name. It had, however, been described earlier by others. Among the congenital abnormalities of the intestinal canal it has the highest incidence, and in necropsy materials it is found in 1–2% (Treves, 1918). Its average length is 2 in. (5 cm.) (varying from a slight bulge to a 6-in. (15-cm.)-long vermiform process), arising from the antimesenteric border of the ileum about 2 ft. (60 cm.) from the ileo-caecal valve, the distance varying from 4 in. to 5 ft. (10 to 150 cm.). It is shaped as a cone or a blunt cylinder protruding at a right angle, or more rarely at an acute angle from the intestine. Ileal mucosa lines its interior, but duodenal or colonic mucosa may also be found, and gastric mucosa is present in 16% of necropsy specimens (Schaetz, 1925). In the clinical material, however, gastric mucosa is encountered in two-thirds of the cases recorded (Schullinger and Stout, 1934; Bussey, 1938; Montant *et al.*, 1950). The French designation "petit estomac" is explained by these facts. Heterotopic pancreatic tissue may also be found.

Infection

Acute inflammation of Meckel's diverticulum, sometimes caused by foreign bodies, gives clinical symptoms and signs quite similar to those of appendicitis.

Case 1

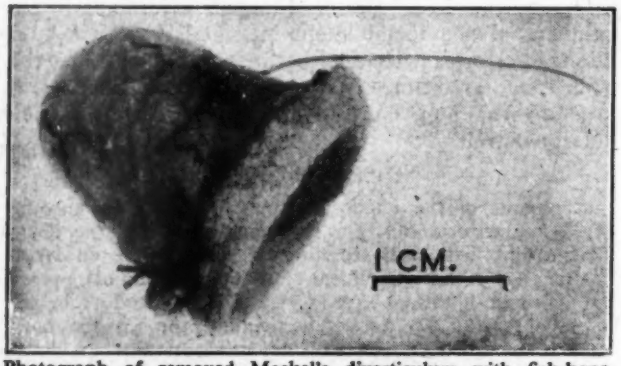
A 5-year-old boy was admitted to Surgical Department A of Frederiksberg Hospital on March 30, 1952, with a diagnosis of appendicitis. He had been treated in the medical department for abdominal pain some months before. There had been short

spells of dizziness, nausea, and abdominal pain four weeks prior to admission. Another attack started the day before with abdominal pain. As the pain grew worse he was sent to hospital. On admission his temperature was 101.8° F. (38.8° C.), pulse 88. Tenderness was found below and medial to McBurney's point, and rebound tenderness and a dubious Rovsing sign were present, but no rigidity. A diagnosis of atypical appendicitis was made, and immediate operation was decided upon. At operation the thickened appendix showing moderate signs of inflammation was removed. As the changes found were not thought sufficient to explain the patient's symptoms, the terminal ileum was inspected. An inflamed Meckel's diverticulum 2.5 cm. long, about 3 ft. (90 cm.) from the ileo-caecal valve, was found and removed. Recovery was uneventful.

Histological Report.—Subacute appendicitis and diverticulitis Meckelii. The pathological changes in the diverticulum were described as more pronounced than those in the appendix.

Perforation

The clinical course is often more stormy than in appendicitis; inflammation may lead to gangrene, early perforation, and peritonitis. Cases of perforation peritonitis caused by foreign bodies, especially fish bones, have been described (see Fig.). Because of the ample and thin intestinal contents



Photograph of removed Meckel's diverticulum with fish-bone perforation, occurring in a 9-year-old girl. (Mr. Wallace Dennison, of the Royal Hospital for Sick Children, Glasgow, has given me permission to use this photograph.)

escaping into the peritoneal cavity and the meagre possibilities of walling off the inflammation at this site, the peritonitis arising is diffuse, and the outlook is more grave than in perforated appendix. Diagnosis is difficult; thus Sibley (1944) reports a case in which delay in operating, because of failure to recognize the inflammatory nature of the intestinal obstruction, led to death from peritonitis and septicaemia. This was partially due to the fact that the patient had been successfully carried through a previous attack with the Miller–Abbott tube and that he seemed to improve under conservative treatment at the beginning of the last attack. The diseased diverticulum may not be looked for at all if an inflamed appendix is found at operation. Discussing this problem, Aalkjær writes (1937): "In several of these cases no discrepancy has been found between the condition of the appendix and the peritonitis, and the surgeon has performed an appendicectomy. Some days later necropsy has revealed the perforated Meckel's diverticulum."

Case 2

A 13-year-old boy was admitted to our department on November 10, 1947, with a 36-hours history of abdominal pain about the umbilicus. The pain later moved towards the right iliac fossa; it was moderate and colicky and more pronounced after meals. He complained of nausea, but there was no vomiting. His bowels had been opened several times.

On examination his temperature was 99.8° F. (37.7° C.) and pulse 112. There were no signs of dehydration, and abdominal examination showed definite tenderness at McBurney's point and a positive Rovsing sign. Appendicitis was suspected, and immediate laparotomy was performed through a lower right gridiron incision; the abdominal cavity contained seropurulent fluid. The caecum was fixed and could not be moved out of the wound; the terminal portion of ileum was found red and inflamed with no distinct line of demarcation. The appendix was difficult to find; it was very long and in the subileal position; it was removed. The changes found were less than those in the ileum, and the surgeon diagnosed ileitis terminalis and closed the abdomen.

The next day, at 3 p.m., the patient had sudden severe pains in his abdomen and a rise of pulse and temperature. Next morning it was evident that a perforation had taken place with subsequent peritonitis, and a further operation was decided upon. At operation on November 12 the abdomen was opened through a lower right pararectal incision. Fibrin-covered intestines were drawn forward, and a ruptured Meckel's diverticulum was found. A simple removal without intestinal resection was possible, and the wound was closed without drainage. Convalescence was uneventful.

Histological Report.—"Meckel's diverticulum with gastric mucosa, severe inflammatory changes and perforation through ileal mucosa. Endoappendicitis levissime gradu."

Intestinal Obstruction

This may be produced by a Meckel's diverticulum. According to Walsh (1949–50) it was the cause in 6% of a large series. A strangulation is the mechanism most frequently met (Lejars, 1921), as the intestine is kinked upon a band extending from the tip of the diverticulum to adjacent mesentery, to the abdominal wall, another coil of bowel, or a pelvic viscus. Sometimes a snare is thereby formed in which an intestinal coil is caught and strangled (Thomsen, 1927). The rarest mechanism is the formation of a real knot in a Meckel's diverticulum around the intestine. This can take place only if the diverticulum is long, mobile, and free, and has an ampullary dilatation of the distal end, designated by French authors as "la clef de l'étranglement."

Among 63 cases of intestinal obstruction caused by Meckel's diverticulum Halstead (1902) found a band in 48, and a band was the cause in 8 out of the 15 cases of Guilleminet *et al.* (1950).

Case 3

A 79-year-old woman was admitted to hospital on July 5, 1947, with a 24-hours history of sudden colicky pains across the abdomen accompanied by nausea and vomiting; no flatus had been passed. There was a slight rise of temperature and she showed signs of dehydration. A straight radiograph of the abdomen revealed dilated coils of small bowel and the erect film many small-bowel fluid levels. Conservative treatment with hot fomentations and fluid diet resulted in an improvement in her condition, and ample flatus and thin stools were passed the next morning. She gradually improved, and some days later another radiograph showed no signs of intestinal obstruction. She returned home on July 23.

On December 23, 1952, she was readmitted as an emergency case. There was a 9½-hours history of nausea, faintness, and later constant pains in the upper abdomen. The bowels had not been opened for 36 hours. On examination the patient was moaning and her tongue was dry. The abdomen was a little distended, but followed the respiratory movements. There was generalized tenderness, most pronounced in the epigastric region, but no rigidity. No tumours and no herniae were found. A pelvic examination gave no further information. Intestinal obstruction because of a tumour or constipation was suspected, and a straight radiograph was taken. Several dilated coils of small bowel and fluid levels in the erect position were seen. No gallstones could be detected and there was no air in the bile ducts. Immediate operation was decided upon.

At operation the abdomen was opened through a lower right pararectal incision. The abdominal cavity contained a considerable quantity of serous fluid. Distended coils of small bowel filled with fluid presented in the wound. After some search a fibrous band extending from the great omentum to the tip of an inflamed Meckel's diverticulum, which had strangled an intestinal loop, was found. On section of this band the intestine regained its normal colour, and the obstruction had thus been removed. Excision of the Meckel's diverticulum was then undertaken, followed by closure of the wound. Convalescence was complicated by a slight inflammation of the wound. Histological examination showed a Meckel's diverticulum with no pathological changes.

Volvulus

Volvulus of Meckel's diverticulum, with or without involvement of the coil of ileum bearing it, is well recognized as one of the ways in which the diverticulum may precipitate acute obstruction of the small gut. The obstruction is of the "closed-loop" type, clinically characterized by violent intestinal colic and absence of peristaltic sounds (Smith, 1945). It is a rare lesion; in the 15 cases of Meckelian obstruction of Guilleminet *et al.* mentioned above there was only one case of volvulus. Intestinal resection is often necessary in these cases (Philippe and Chattot, 1950; Tagart, 1953).

Case 4

A 37-year-old mechanic was admitted to hospital with a five-days history of vague and intermittent pains, most pronounced in the epigastrium. For the two days preceding admission he had been confined to bed because of pains and vomiting. On the day of admission his pains had increased in intensity. There had been two loose motions on the day before and a trace of thin faeces and flatus on the day of admission.

On examination he appeared ill, with an anxious expression, lying with his legs drawn up. His tongue was dry; temperature 99.8° F. (37.7° C.), pulse 80. Examination of the abdomen revealed some distension and generalized tenderness, especially around McBurney's point; here rigidity was present. Acute appendicitis with perforation was suspected and immediate operation was decided upon

At operation the abdomen was opened through a right muscle-splitting incision. As the peritoneum was opened, 0.5 to 0.75 litre of serous fluid gushed out. The appendix was found swollen and red, lying in a subileal position, and was removed in the usual way. On account of the exudate the ileum was inspected after widening the incision, and about 75 cm. from the ileo-caecal valve a torsion of the ileum was found fixed to the root of the mesentery by adhesions around an inflamed Meckel's diverticulum. The gut was distended and bluish-red proximally to this and contracted distally to it. After the adhesions had been cut the volvulus untwisted itself. No resection of intestine was necessary as the gut was viable, and after excision of the diverticulum the abdominal wall was closed without drainage.

The patient's condition deteriorated, and he died 24 hours after the intervention, with the clinical picture of intestinal paralysis and hyperthermia. Necropsy gave no further information.

Intussusception

An introversion of a Meckel's diverticulum may take place, causing obstruction of the ileum (Wessel, 1925–6) or an ileo-ileal intussusception. According to Harkins (1933) this variety of intussusception has several distinguishing features: (*a*) it occurs in older individuals, (*b*) a history of previous attacks is more frequent, (*c*) vomiting is more intense, and (*d*) the course of the disease is more chronic and there is often a mild attack a day or two before the onset of the major illness. A correct diagnosis of this condition is usually made too late, and an intestinal resection is often required (Benson and Sharpe, 1950) because of irreducibility and gangrene. In infants the condition is very rare (Aitken, 1950).

Case 5

A 12-year-old girl was admitted to hospital on December 31, 1952, with a 16-hours history of sudden pains around the umbilicus, gradually subsiding. Fourteen hours before admission a new bout of pains occurred after a meal. She had no appetite, and her mother gave her an aspirin tablet. There had since been pains of constant character localized to the umbilical region and the right iliac fossa, of varying intensity. She had vomited several times and there had been a normal motion just before admission.

On examination her tongue was dry; temperature 99.4° F. (37.4° C.) and pulse 88. The abdomen was slightly distended, with no visible peristalsis and normal intestinal sounds. Direct tenderness and rebound tenderness were elicited about McBurney's point; Rovsing's sign was positive, and a rectal examination revealed tenderness to the right. Immediate operation was decided upon, with a preliminary diagnosis of acute appendicitis, even if the symptoms were not typical and she appeared more dehydrated than was to be expected with such a temperature.

At operation the abdomen was opened through a gridiron incision; there were large amounts of serous fluid in the peritoneal cavity. The appendix was in a subcaecal position and showed no signs of inflammation, but a small carcinoid was present at its tip. The appendix was removed. Palpation of the uterus and adnexa revealed nothing abnormal. Inspection of the ileum revealed a 25-cm.-long ileo-ileal intussusception located about 30 cm. from the ileo-caecal valve. The intussusception was reduced, and at its apex an inflamed introverted Meckel's diverticulum was found. The diverticulum was excised without intestinal resection. Convalescence was uneventful. Histological examination showed carcinoid of the appendix and a Meckel's diverticulum with severe inflammatory changes.

Similar cases have been described by Vangsted (1918), Langballe (1918), Holst (1928), Pettersen (1928), Taylor (1947), and others.

Associated Conditions

Owing to the aberrant gastric mucosa a peptic ulcer may be formed in Meckel's diverticulum, especially at the junction between the ileal and gastric mucosa at the base of the diverticulum. Complicating the ulcer, perforation or bleeding may take place; numerous cases of this type have been reported—for example, Nielsen (1933–4), Klindt (1933–4), Aalkjær (1937), Manning and McLaughlin (1947), Jay *et al.* (1950), Hancock (1951), Aitken (1953). In melaena with no known cause an ulcer in a Meckel's diverticulum may thus be the origin of the trouble. Dragstedt (1933) has shown that the heterotopic gastric mucosa secretes hydrochloric acid and pepsin. These secretions become irritating to the ileum, producing spasm in the walls of the ileum and the diverticulum (Sibley, 1944). This author defines a condition called "dyspepsia Meckelii," characterized by pain in the lower right quadrant, the epigastrium, or the periumbilical region.

If the communication with the ileum is obliterated the rare retention cysts may arise. Isolated cases of calculi in a Meckel's diverticulum have been described (Allen and Donaldson, 1945; Palmström, 1950). They give symptoms simulating obstructive appendicitis, and the stones consist of faecal material and bile pigment; they are not visible in radiographs.

Solitary cases of carcinoid in Meckel's diverticulum have been reported (Stewart and Taylor, 1926; Hertzog and Carlsen, 1935; Pautler and Scotti, 1951). Even carcinoma of Meckel's diverticulum has been described (Weir, 1937).

A Meckel's diverticulum may be contained in a hernial sac, usually of a femoral hernia, as originally described by Littre (1700). Littre's hernia is a special variety of the so-called Richter's hernia. Inflammation of a Littre's hernia often takes place, and it becomes irreducible. The characteristic complication is incarceration which may go on to abscess and fistula formation (Mair, 1948).

A diagnosis of Meckel's diverticulum is seldom arrived at pre-operatively. Solitary cases of radiographic demonstration of a Meckel's diverticulum have been reported (Aalkjær, 1937; Rousseau and Martin, 1943; Butler *et al.*, 1950), but in the acute cases this method is not to be recommended.

Treatment

In cases of intestinal obstruction, perforation, or diverticulitis the diverticulum should be removed. Opinion on this is unanimous. Removal can often be performed in the same way as an appendicectomy. If the base is thick (and the gastric mucosa is often at the base, as mentioned above) a large wedge-shaped excision should be performed, followed by repair. If this is not possible a bowel resection is required, and in our department we prefer a side-to-side anastomosis.

Many authors state that an incidentally found Meckel's diverticulum should be left alone. Sibley (1944), however, recommends the earliest possible removal of any Meckel's diverticulum. Considering the grave abdominal complica-

tions with a high mortality (about 15% according to Wagner *et al.*, 1950) it can provoke, any incidentally found Meckel's diverticulum should be removed if this procedure does not materially increase the operative risk.

Summary

The complications of Meckel's diverticulum which call for emergency surgery are infection, obstruction, intussusception, volvulus, and haemorrhage. The difficulties in diagnosis have been illustrated by five cases.

The incidentally found Meckel's diverticulum should be removed if this procedure does not materially increase the operative risk.

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In 1953 the accident section of the London Ambulance Service dealt with 90,896 emergency calls—compared with 87,691 in 1952 and 87,012 in 1951. Thirty-nine ambulances were in commission, operating from the 18 accident ambulance stations; they covered 457,514 miles, an increase of 15,246 over 1952. Fridays and Saturdays are still the busiest days of the week, with averages of 267 and 266 calls, and Sunday remains the quietest day with 188 calls. Unlike 1952, when most calls were received in December, in 1953 the highest average number of calls were received in June—280 calls a day—and May—269 calls a day. These figures reflect the record numbers reached on Coronation Day, when 650 patients were removed by the London Ambulance Service. The general section of the Service, which deals with the non-urgent removal of sick people, carried out 428,946 journeys in 1953, conveying 721,334 patients a distance of 3,625,430 miles. In 1951 550,621 patients were carried, and in 1952 660,206. The majority of these journeys were for the conveyance of out-patient cases to and from hospitals, clinics, etc.

COMPARISON OF SODIUM AND PROCAINE PENICILLIN IN TREATMENT OF EXPERIMENTAL STAPHYLOCOCCAL INFECTION IN MICE

BY

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It is remarkable that there is still a division of opinion regarding the administration of penicillin in the treatment of infections. It has often been maintained that the therapeutic benefits of penicillin depend on the time during which there is an amount of penicillin in the blood stream sufficient to kill or inhibit the growth of the infecting organism. This possibility was recognized in the early days of penicillin therapy, and the continuous administration of penicillin by intramuscular drip rather than by intermittent intramuscular injection was advocated so that a bacteriostatic level of penicillin in the blood could be maintained throughout treatment. It was, however, pointed out by Hudson *et al.* (1946) that, for the same amount of penicillin over a 24-hour period, the intermittent method of administration gave a much higher average level of penicillin in the blood than the continuous method, and they also contended that intermittent therapy would be more effective in that the high peaks of penicillin obtained in the blood after each injection would enable penetration of penicillin into the foci of infection. The intramuscular drip method was soon abandoned, largely because of technical difficulties in its application, with the result that no clear-cut comparison could be made of its value relative to the more widely used intermittent method.

The question has again been raised with the introduction of depot preparations of penicillin, which have the advantage over sodium penicillin of prolonging the absorption of penicillin from the site of injection, so that effective concentrations are maintained in the blood stream for a much longer time. It is on these grounds that the advocates of the new preparations recommend their use, but it appears that little or no evidence has been adduced to show that they are better than aqueous solutions of sodium penicillin in the treatment of infections. The experiments described here have been designed to provide such evidence so far as it applies to an experimental infection which has been used by Selbie and Simon (1952) in their investigation on the virulence of *Staph. pyogenes* to mice.

Material and Methods

The two strains of *Staph. pyogenes* used for these experiments have been described by Selbie and Simon (1952). Strain No. 221 was used for five experiments, but had to be abandoned because of a fall in virulence. Fourteen experiments were done with Strain No. 144. At the time of the experiments the growth of the strains *in vitro* was inhibited by about 0.04 unit of penicillin per ml.

In each experiment four groups of six mice of about 30 g. body weight were inoculated intramuscularly in the left thigh with 0.2 ml. of an 18-hour culture of *Staph. pyogenes* in tryptic digest broth. The first group was left untreated, and the succeeding groups were treated with an aqueous solution of the sodium salt of penicillin G, a suspension of procaine penicillin G in arachis oil containing 2% aluminium stearate ("avloprocil"), and an aqueous suspension of procaine penicillin G ("distaquaine G"). Each

*Professor F. R. Selbie died on February 22.

dose of penicillin preparation contained 30,000 units in 0.1 ml. and was injected subcutaneously in the right axilla so as to be as far away as possible from the site of infection and thus ensure that penicillin would reach the lesion by way of the blood stream rather than by direct diffusion through the tissues.

In two series of experiments treatment with penicillin was started three hours after inoculation, when some swelling of the thigh could already be detected. This was done on the basis of preliminary experiments which showed that earlier treatment rapidly abolished the lesions in most of the mice, whereas when treatment was started at three hours the great majority of the mice showed measurable swellings during the whole of the succeeding week, so that an opportunity could be afforded of measuring differences in response to the various penicillin preparations. In the third series treatment was not started until after 24 hours, when the lesions were first measured. Measurement of the lesions was made at 1, 2, 4, and 7 days after inoculation by determining the diameter of the left thigh by callipers to the nearest millimetre and subtracting the diameter of the normal thigh.

Results

The average effect of six experiments in which only one dose of penicillin had been given three hours after inoculation is shown in Fig. 1. The average effects of two further series of experiments in which four daily doses of penicillin have been given, commencing at 3 hours and 24 hours after inoculation, are shown in Figs. 2 and 3 respectively. The overall mortality rate of 1% has not interfered with the analysis of the results, especially as only one mouse has died in each affected group. Progressive infection, as judged by the increasing average size of the swellings, has been obtained in the untreated mice of all the experiments except for the onset of regression after two days in one experiment, and after four days in three experiments. All three penicillin preparations reduced the size of the lesions as compared with those in the control mice, but there were great differences between experiments in response to the three penicillin preparations.

The results have been submitted to Dr. L. J. Edwards for statistical appraisal. He finds that the most suitable way of dealing with these is to express the sum of the swellings on each day in each experimental group of six mice as a percentage of the sum of the swellings in the corresponding control group on that day. The means of the percentages for each day in each treatment have been used to construct Figs. 1 to 3. Dr. Edwards has also calculated the variances of the means, and concludes that all three penicillin preparations significantly reduce the size of the swellings on all regimes of dosage and on all days of measurement, but none of them can be said to be demonstrably better than either of the others.

Concentration of Penicillin in Blood of Mice

The concentration of penicillin in the blood serum of mice at intervals after subcutaneous injection of the three penicillin preparations in the dose of 30,000 units used for treatment was estimated by the twofold serial dilution method described by Selbie *et al.* (1945). Each estimation was made on 1 ml. of serum from the pooled blood of three mice which were bled from the heart with a Pasteur pipette immediately after they were killed.

The results are shown in the Table. It will be seen that during the first 10 minutes sodium penicillin gives a concentration in the serum five times greater than the highest level attained at any time by either of the other preparations. It can also be seen that the concentrations given by sodium penicillin are lower than those given by the other two preparations from 30 minutes onwards and are no longer detectable by the method used at 18 hours. The results obtained with the procaine penicillin preparations show a more rapid absorption from the aqueous suspension, which, however, gives detectable levels of penicillin up to at least four days, as against seven days with the oily preparation.

Discussion

The clinical use of procaine penicillin preparations in preference to sodium penicillin is based largely on the contention of Eagle *et al.* (1950) that the curative effect of penicillin depends primarily on the concentration of penicillin in the blood and the total time for which it remains at effective levels. It has, however, been shown here that equivalent doses of sodium penicillin and two preparations of procaine penicillin are equally effective in controlling the lesions of an experimental staphylococcal infection in mice. If the presence of a bacteriostatic level of penicillin in the blood were the principal factor in determining a curative effect, the blood levels shown in the Table would indicate that the dose of sodium penicillin used would become ineffective

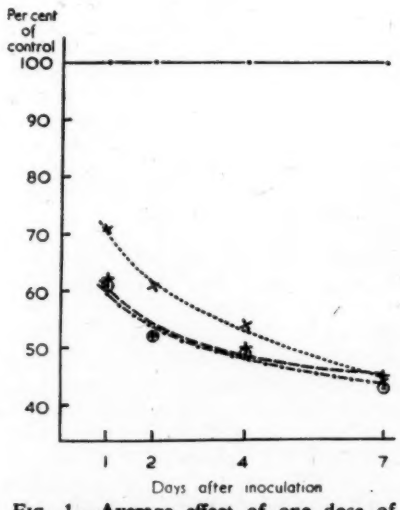

FIG. 1.—Average effect of one dose of 30,000 units of penicillin given three hours after intramuscular inoculation of *Staph. pyogenes*. ——— Untreated mice. ⊙——⊙ Mice treated with sodium penicillin. ×----× Mice treated with oily suspension of procaine penicillin. +——+ Mice treated with aqueous suspension of procaine penicillin.

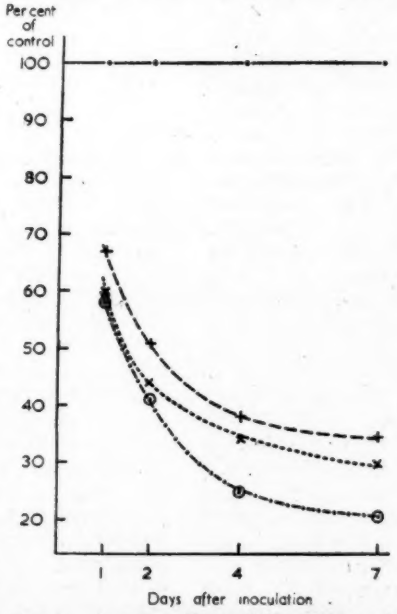

FIG. 2.—Average effect of four doses of 30,000 units of penicillin given 3 hours, 1 day, 2 days, and 3 days after intramuscular inoculation of *Staph. pyogenes*. Explanation as for Fig. 1.

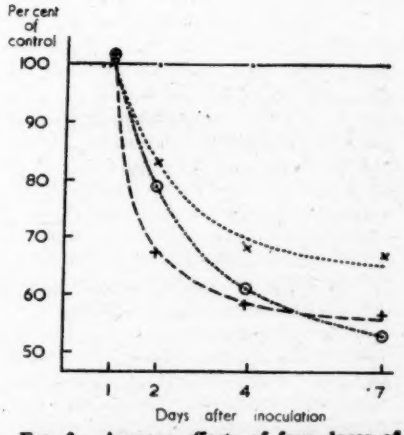

FIG. 3.—Average effects of four doses of 30,000 units of penicillin given 1, 2, 3, and 4 days after intramuscular inoculation of *Staph. pyogenes*. Explanation as for Fig. 1.

Penicillin in Blood Serum of Mice After Subcutaneous Injection of 30,000 Units of Penicillin in 0.1 ml.

Preparation	Units of penicillin per ml. at												
	Minutes			Hours						Days			
	5	10	30	1	3	6	12	18	24	2	4	5	7
Sodium penicillin G	800	800	2·5	1·3	5	1·3	0·64	—	—	—	—	N.D.	—
Oily suspension of procaine penicillin	20	40	160	10	5	2·5	10	N.D.	5	2·5	1·3	N.D.	0·04
Aqueous suspension of procaine penicillin	40	40	160	160	40	40	20	N.D.	0·64	1·3	0·08	—	—

—= Less than 0·04 unit per ml. N.D. = Not done.

within 18 hours, whereas the equivalent doses of oily and aqueous procaine penicillin would remain effective for four and seven days respectively.

It is, however, obvious from Fig. 1 that the curative effect following one injection of sodium penicillin continues long after penicillin falls below a detectable level in the blood, and is as good as that obtained after an injection of procaine penicillin. This continuing effect after sodium penicillin treatment is also evident when four daily doses are given, whether the first dose is given at 3 hours or 24 hours after inoculation (Figs. 2 and 3); in both regimes the aggregate time during which effective levels of penicillin would be present in the blood is less than three days with sodium penicillin and seven days with the procaine penicillin preparations.

It would thus appear that the total duration of an effective level of penicillin in the blood is not the only factor that is of importance in determining the curative effect of penicillin in this experimental infection. Two of the factors that have to be considered are the maximum concentration of penicillin attained in the blood and the defence mechanisms of the host. The Table shows that the maximum concentration of penicillin detected in the blood after the injection of sodium penicillin is five times greater than that detected after injection of the procaine penicillin preparations. Sodium penicillin would therefore give a much higher concentration of penicillin in the staphylococcal lesions and so produce a greater therapeutic effect than procaine penicillin. This more intensive effect of sodium penicillin would, however, be maintained over a relatively short period.

The reason why such a short but intensive action of sodium penicillin should be as valuable as the prolonged maintenance of a lower therapeutic level by procaine penicillin may be found by a consideration of the part played by the natural defence mechanisms of the host. These mechanisms are constantly in operation, and are so effective that staphylococcal infections in man and the experimental infection described here are in the end usually overcome even when chemotherapy is withheld. The part played by penicillin may then be regarded as an intervention in this natural process whereby the suppression of the staphylococci by the antibacterial action of penicillin, even if it is only temporary, so tips the scales in the reactions between host and parasite that the defence mechanisms of the host become more effective. The relatively high concentrations attained immediately after an injection of sodium penicillin at an early stage of infection would thus exert a more intensive effect, and the later continuing effect would be entirely due to the operation of the natural defence mechanisms. Procaine penicillin, on the other hand, would have a less intensive initial effect, but the results of the experiments show that it largely overcomes this disadvantage by its much more prolonged intervention at a relatively low intensity.

These conclusions are at variance with the views of Eagle *et al.* (1950). They, however, have based their conclusions on a different type of experimental infection. In one of their recent publications they show that the effect of penicillin in reducing the mortality rate of a streptococcal infection in mice depends primarily on the aggregate time during which penicillin is present in the blood at or above the bactericidal level, irrespective of the dosage regime, provided that the interval between doses is not too long (Eagle *et al.*, 1953). It must, however, be borne in mind that the streptococcal infection used by Eagle and his co-workers and the staphylococcal infection used here are very different in their behaviour. Mice have little or no immunity to haemolytic streptococci, so that the experimental infection is rapidly fatal. On the other hand, mice are so much more resistant to staphylococcal infection that even the large numbers of staphylococci used for inoculation in the experiments described here produce only a local lesion with a very low mortality rate. The intense exudative response to the staphylococcal infection also appears to make the organisms less accessible to penicillin, as can be judged by the much larger doses required to control the staphylococcal lesions as compared with the streptococcal infection, in which the organisms are more directly in contact with the circulating body fluids. It is therefore not surprising that the two experimental infections should differ in their response to chemotherapy.

The application of these findings to the penicillin treatment of infections in man is difficult because of the highly artificial nature of animal experiments. It can be said that the experimental staphylococcal infection resembles conditions in man more closely than the streptococcal infection of Eagle and his colleagues because most human infections elicit some degree of response on the part of the body defences. If this view is accepted it is then apparent that penicillin treatment should be given in such a manner as to give maximum aid to the body defences. The results presented here suggest that this can be done just as well with sodium penicillin as with procaine penicillin even when doses are given infrequently. Evidence in support of this view is to be found in the report by Tompsett *et al.* (1949), who have failed to detect any difference in response between 21 cases of pneumococcal pneumonia treated with daily doses of 30,000 units of procaine penicillin in oil, and 19 similar cases treated with three 12-hourly doses followed by daily doses of 300,000 units of sodium penicillin.

Another investigation of this type is that of Griffiths *et al.* (1949), who found no significant difference in response to treatment between a group of 116 patients with acute septic infection, mainly staphylococcal, given a daily injection of 300,000 units of an oily suspension of procaine penicillin and a similar group of 116 patients given twice-daily injections of 300,000 units of sodium penicillin in saline. Both groups of authors suggest that their results warrant the conclusion that a continuous effective level of penicillin is not necessary for the control of the two respective types of infection.

The results recorded here and a search of the literature have been disappointing in that no clear evidence has been found to show whether sodium penicillin or procaine penicillin gives the better results in the treatment of infections. It is probably true that the prolonged blood levels obtained with procaine penicillin are of great value when only one dose of penicillin can be given, as in the mass treatment of syphilis and yaws. On the other hand, even when penicillin can be given only at infrequent intervals, it has yet to be proved in practice whether the prolonged low blood levels provided by procaine penicillin are more efficacious than the short-lasting but high blood levels provided by sodium penicillin in the treatment of the generality of infections amenable to penicillin therapy.

Summary

It has been shown that sodium penicillin is as effective as either oily or aqueous procaine penicillin in the treatment of an experimental staphylococcal infection in mice.

It is concluded that the curative effects of penicillin depend not so much on the aggregate time that an effective level of penicillin is present in the blood as on other factors, of which the most important is the co-operation of the defence mechanisms of the host.

The application of these findings to the treatment of human infections is discussed.

I wish to thank Dr. L. J. Edwards, of the Beecham Research Laboratories, Brockham Park, Surrey, for his help in this investigation.

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THE MALE CLIMACTERIC: IS IT AN ENTITY?

BY

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In Dorland's *Medical Dictionary* the climacteric is defined as "a particular epoch of the ordinary term of life at which the body is believed to undergo a radical change," and the male climacteric as "the phenomena attending the normal decrease in sexual function in the male." In an annotation entitled "The Middle-aged Man," in the *British Medical Journal* (1953), the following statements appear: "Claims have been made, and denied, that there is a rare syndrome properly described as the male climacteric. The symptoms of the presumed syndrome, briefly, are depression, irritability, lack of concentration, palpitation, weakness, and sexual impotence. . . . These claims, however, have been refuted by other workers unable to corroborate them. The so-called syndrome, they assert, is a psychiatric illness. . . . No one has described a condition in men with disturbance of hormone secretion as the only symptom of the so-called male climacteric. . . . Until an occult deficiency of testicular androgen—provided this can be estimated—is shown to bear a direct causal relation to the multiplicity of symptoms embraced by the term male climacteric, we have no ground for accepting the concept." These statements were repeated in *Prescribers' Notes* (1953), issued by the Ministry of Health. It is my endeavour in this article to demonstrate that the male climacteric exists as a clinical entity.

Female Climacteric

Before the problem of the male climacteric is discussed it is pertinent to refer to the complexities of the female counterpart, the existence of which, so far as I am aware, has not been denied. Although the climacteric is defined in a modern British medical dictionary as "the menopause," this definition needs correction, for the two terms should not be confused. Menopause simply means "cessation of menstruation" brought about by physiological failure of ovarian function. All women have a menopause—if they live long enough—but not all women have symptoms of the climacteric; in fact, many women pass through this period of life with few or no disturbances.

As the critics of the existence of the male climacteric have insisted that its alleged symptoms must be shown to be caused by deficiency of testicular androgen, the cause of the symptoms of the female climacteric must be considered. At the time of the menopause the level of oestrogen in the blood falls as a result of the ovarian changes, and at the same time the titre of gonadotrophin (follicle-stimulating hormone, F.S.H.) rises through removal of the inhibiting influence of oestrogen on the anterior lobe of the pituitary gland. Climacteric symptoms may be directly due to oestrogen deficiency, to excessive gonadotrophin, or to some other factor. The improvement which may be effected by the administration of oestrogen is no proof that oestrogen deficiency is the direct cause of the symptoms, for their amelioration may be due to the fall in the level of gonadotrophin which the administered oestrogen produces. On the other hand, there are observations which suggest that neither of these two factors is responsible—namely: (1) many women do not have climacteric symptoms although their oestrogen level is low and their gonadotrophin titre high; (2) climacteric symptoms may appear before menstruation ceases—that is, when the oestrogen level is within normal limits; and (3) they do not occur in oestrogen deficiency due to hypopituitarism or (4) in ovarian infantilism. In fact, on grounds such as these Pratt (1950) concluded that a hormonal basis alone does not explain the symptoms of the female climacteric.

From this very brief and cursory survey it will be seen that the aetiology of the symptoms of the female climacteric is by no means established and that arguments similar to those brought forward against the existence of the male climacteric, such as those mentioned in the first paragraph of this paper, could well be advanced to deny the existence of the female climacteric.

Male Climacteric

Landau (1951), discussing the concept of the male climacteric, has stated that the period of life during which "climacteric" symptoms are presumed to occur is also the time at which the emotional and intellectual adjustment of the shift from maturity to old age must begin to be made, and that some men at that time develop neurotic reactions such as impotence and general subjective disturbances. This statement is undoubtedly true, and in my experience these patients are not improved by the administration of androgens. However, similar emotional and neurotic upsets occur in menopausal women and are not benefited by the administration of oestrogen, but this is not sound evidence that the female climacteric does not exist.

In discussing the problem of the existence of a male climacteric and whether it is due to or associated with testicular deficiency the following observations should be considered.

(1) Comparison of Symptoms of Male Climacteric with Those of Post-pubertal Castration

In post-pubertal castration libido and potency are generally diminished or absent, but this does not happen in all cases. Similarly, potency and libido may or may not be affected in the male climacteric. After castration has been performed in the adult he may experience hot flushes and sweats and suffer from generalized weakness, lack of mental drive and energy, diminished power of concentration, a sense of inferiority, emotional instability, and fits of depression. The same symptoms occur in the male climacteric. The argument, however, has been produced that in the middle-aged man they are primarily of psychological origin and that any improvement that may be obtained by the administration of testosterone is due to suggestion; yet I have had referred to me by psychiatrists castrated and eunuchoid patients with such symptoms which have disappeared or have been greatly improved with

androgen therapy. Should one assume that the improvement in these cases of known testicular deficiency is also the result of suggestion? This is unlikely, although it must be borne in mind that the improvement in these "neurotic" and "psychoneurotic" symptoms may be secondary and due to the attainment of potency (but see (3) below concerning the anabolic action of androgens).

(2) 17-Ketosteroid Excretion

The urinary excretion of 17-ketosteroids is an index of the amount of androgens produced by the Leydig cells of the testicular interstitial tissue and by the adrenal cortex. Because of the production of adrenal androgens it is often impossible by estimation of the urinary 17-ketosteroids alone to distinguish a eunuch from a normal man. Callow *et al.* (1940) found that normal adult men excreted 3.5 to 15 mg. of 17-ketosteroids in 24 hours and that eunuchs excreted 3.1 to 10.9 mg. in 24 hours. By this investigation, therefore, it is difficult to demonstrate androgen deficiency in the male climacteric. However, on the whole in men of middle age the excretion of 17-ketosteroids begins to decline: at the age of 40 the mean is 14 mg. and in old age 3.4 mg. in 24 hours (Dorfman, 1948). Howard *et al.* (1950) observed that in six patients whom they considered to be suffering from the male climacteric the urinary 17-ketosteroids "tended to be low," the values ranging from 3.9 to 10.2 mg. in 24 hours.

(3) Anabolic Action of Androgens

What is often overlooked or not fully appreciated is that in addition to their effect on the sexual organs androgens have a powerful anabolic action. They promote the anabolism of protein and increase muscular bulk and strength: thus are explained the weakness and early fatigue of the eunuch. One does not therefore have to search for a psychological cause to explain these symptoms in the middle-aged man with testicular failure. The effect of androgens on the central nervous system is not yet known. The psychological symptoms which may occur in the eunuch or in the male climacteric may be secondary phenomena resulting from sexual inferiority, or, on the other hand, they may even be primary, arising through deficiency of whatever action testosterone may have on the higher centres. In this connexion it should be noted that the administration of testosterone to women with panhypopituitarism improves their psychological disturbances and gives them a sense of well-being.

(4) Titre of Gonadotrophin

It is well recognized that high levels of F.S.H. of the anterior pituitary gland are present in the urine of men with primary hypogonadism. Heller and Myers (1944) found that in 15 men with psychoneuroses or psychogenic impotence the titre was normal, whereas in 23 men whom they considered to be suffering from the male climacteric the titre was unequivocally higher. Sniffen *et al.* (1951), who have made a careful and extensive study of testicular abnormalities, have stated that it is unusual for elderly men to have raised urinary gonadotrophin, although it is the rule in post-menopausal women, but that some men do suffer from symptoms similar to those experienced by women at the time of the menopause; in these men they found that the urinary gonadotrophin was significantly raised.

McCullagh and Hruby (1949) observed that in cases of severe hypogonadism in the male the titres of urinary F.S.H. were not reduced to normal levels by the administration of testosterone in amounts sufficient to create normal titres of urinary 17-ketosteroids and clinical signs of masculinization. This failure of testosterone to inhibit pituitary activity in doses sufficient to overcome androgen deficiency they cite as evidence in favour of the theory that a second testicular hormone (inhibin) exists normally and that it is this substance which has the power to inhibit the secretion of F.S.H. Howard *et al.* (1950) have also produced evidence in support of the existence of a second testicular hormone, which they prefer to call "X" hormone: thus, in bilateral mumps orchitis the tubules are destroyed and the titre of F.S.H. is raised, while the appearance of the Leydig cells (which secrete testosterone), virilization, and excretion of 17-ketosteroids are all normal. These authors have brought forward arguments which suggest that the Sertoli cells are the source of X hormone and that F.S.H. stimulates its production. According to this view it is damage not of the Leydig cells but of the Sertoli cells which causes the increase in titre of F.S.H. These observations lead us to a consideration of testicular histology.

(5) Testicular Histology

Heller and Myers (1944) performed testicular biopsy on 8 of their 23 cases of the male climacteric. In five they found reduction in size and in activity of the seminiferous tubules and reduction in size and number of the Leydig cells of the interstitial tissue, and in three hyaline degeneration of the tubules. Nelson (1948), in cases which he classified as the male climacteric, observed essentially normal seminiferous tubules but decreased numbers of Leydig cells with abnormal cytological characteristics. Howard *et al.* (1950) and Sniffen *et al.* (1951), on the other hand, found normal testicular histology in their patients, although the excretion of F.S.H. was raised in all.

Howard and his colleagues divide the climacteric in both sexes into two stages: (*a*) compensated, and (*b*) decompensated. They state: "In the compensated stage there is a tendency to decreased production of one of the gonadal hormones (oestrogen in the female and X hormone in the male); this tendency is met by overproduction of F.S.H., so that the gonadal function remains essentially intact. In the decompensated stage this tendency to gonadal hormone failure is not counterbalanced in spite of increased production of F.S.H., and gonadal failure becomes clinically demonstrable. In the female the compensated stage lasts a very short time; in the male, on the other hand, one seldom meets the decompensated stage. In the compensated stage in the male, therefore, one would anticipate that the Sertoli cells would be normal microscopically, as indeed they appeared to be."

(6) Effect of Treatment

It has been mentioned above that the improvement obtained in the so-called male climacteric by the administration of testosterone has been imputed to suggestion. Heller and Myers (1944), however, have reported that the injection of an inert oil without the patient's knowledge of any substitution resulted in a relapse.

Conclusion

From these observations and from my own clinical experience I find it difficult to deny the existence of the male climacteric. Heller and Myers (1944) have stated that whereas the climacteric in females is a physiological process, in males it is rare and pathological. Bauer (1944) asserted that on these grounds the syndrome should be termed "testicular insufficiency" rather than male climacteric; he maintained that if the term climacteric is used, as it should be, to designate the cessation of gonadal activity, then there is little justification for using the term male climacteric, for although the functional activity of the testes declines with advancing years there is no definite age at which they stop functioning as do the ovaries. In this respect it would appear that decline of sexual function in the middle-aged and post-middle-aged man is not denied and that the problem is one of terminology. If we adhere to the definition of climacteric as given at the beginning of this paper I do not understand why application of the term to the male should be abandoned merely because cessation of gonadal activity occurs between the ages of 45 and 55 in women whereas in men it occurs between the ages of 50 and 70 or not at all. Further, why should decline in gonadal activity of elderly men be pathological, whereas in elderly women it is physiological? As

Abarbanel (1945) has pointed out, the process of ageing can become manifest in various organs at varying times, and just because the testis may be one of the last to succumb does not mean that it has now become the site of a pathological process while a similar state in the ovary is merely physiological.

Summary

It is considered that the male climacteric is a definite clinical entity, for the following reasons: (1) Similar symptoms occasionally occur in post-pubertal castrates and eunuchoids and are improved by androgen therapy. (2) The 17-ketosteroid secretion, while by no means diagnostic of testicular insufficiency, tends to be low. (3) Some of the symptoms can be explained by lack of the anabolic action of testosterone. (4) The urinary excretion of gonadotrophin is raised—indicative of testicular, but not necessarily of androgen, insufficiency. (5) The testicular histology may show structural changes. (6) The symptoms are improved with androgen therapy, but relapse when an inert substance is substituted. (7) Arguments similar to those advanced against the concept of a male climacteric could be raised against the existence of a female climacteric, which, however, has never been questioned.

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Can better use of the domiciliary services provided by local authorities help to relieve the pressure on the hospitals? This was one of the questions put by the Minister of Health, Mr. IAIN MACLEOD, when he addressed the annual meeting of the County Councils' Association in London on May 26. Mr. Macleod made a plea not only for closer co-operation between those responsible for the operation of the health and welfare services and the general practitioners, but also for the fullest opportunity to be given for voluntary effort to make this contribution, especially in helping to solve the growing problem of the care of old people. "We know," he said, "that it is possible to relieve the hospitals of some part at least of the burden now falling on them if better and perhaps more intelligent use can be made of the services provided by the local health authorities. It is not only a question of cost. There are many types of patient who, provided always that there is no clinical reason to the contrary, are better cared for in their own homes than in hospital. This applies particularly to many children and old people, and to the majority of maternity cases, and it is even more true that the vast majority of healthy old people and children are far better if they can be enabled to continue living in their own homes and families and to receive there proper care and supervision." The home nursing of sickness, he continued, was entirely dependent on a sufficient number of home nurses and home helps. Local health authorities should carefully watch to make sure that there were enough of them in their areas. He would also like to see local health authorities consulting general practitioners in their areas, through either executive councils or local medical committees, to find out to what extent doctors felt themselves compelled, owing to the shortage of home nurses and home helps, to refer patients to hospital who might otherwise have stayed at home.

ISONIAZID IN TREATMENT OF BONE AND JOINT TUBERCULOSIS

A REVIEW OF 20 CASES

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The Medical Research Council's (1952) interim report on the use of isoniazid (isonicotinic acid hydrazide) alone in 173 patients with pulmonary tuberculosis and of streptomycin combined with *p*-aminosalicylic acid (P.A.S.) in 158 others, concluded that, "judging wholly from short-term results," isoniazid is "a very effective drug" in that condition. It therefore seemed necessary to us to make an immediate study of its short-term effects in bone and joint tuberculosis in circumstances in which the drug would be used as the sole chemotherapeutic substance in the patients under consideration. There have already been reports on the use of the drug with and after streptomycin in bone and joint disease, and especially in "advanced" cases with sinuses and other complications, but we are not aware of any reports of its planned use alone in reasonably early uncomplicated cases.

To study such effects means denying our patients the known and very real benefits of streptomycin, and to obtain many suitable cases of bone and joint disease takes a long time. We therefore planned a small short-term study, designed purely as a pilot experiment, to tell us whether or not anything unexpected would occur in the course of the disease under treatment with this drug alone. We decided that six months was as long as we might deny streptomycin to our patients, and, though this is a very short time in the evolution of skeletal disease, we regarded it as probably adequate for a pilot investigation. All we sought was the answer to one simple question, Does anything unusual occur in the early evolution of the disease under the influence of isoniazid?

The Investigation

To give the drug every chance we selected "good" cases, not failures after other measures. Our 20 patients all had short histories of hitherto untreated new tuberculous lesions of bones and joints. We carefully excluded any case which could have been a recrudescence of an old lesion, and any patient who had had previous chemotherapy. The details of the patients are summarized in the Table. All 20 were admitted to the Robert Jones and Agnes Hunt Orthopaedic Hospital. In all save six spinal cases the diagnosis was or had been proved by biopsy or by recovery of the bacillus by aspiration of abscesses and recovery of *M. tuberculosis* therefrom, and in one of these six, all of which were clinically and radiologically typical, we accepted the presence of a proved active tuberculous lesion elsewhere in the body as adequate evidence that the spinal lesion was in fact tuberculous. The patients' ages ranged from 5 to 45 years. Ten were aged 20 or under. There were 13 males and 7 females. The sites of the lesions were: lumbar spine, 6; hip, 5;

Summary of Cases

Case No.	Sex and Age	Site of Lesion	Type of Lesion	Treatment		Iso-niazid (mg./day)	Other Treatment Given	Weight			*X*-ray Appearances		General Response to Treatment	E.S.R. (mm./hr.)		White-cell Count		Comments
				Began	Ended			Before Treatment	After 3 Months	After 6 Months	Before Treatment	After 6 Months		Before Treatment	After 6 Mths	Before Treatment	After 6 Mths	
1	F 20	L. knee	Synovial (proved by biopsy)	31/5/52	1/12/52	250	Thomas splint and plaster gutters	112 lb. (50·9 kg.)	126 lb. (57·3 kg.)	128 lb. (58 kg.)	Visible synovial thickening. Some diffuse porosis. No destruction. Joint space normal	Unchanged	Good	29	12	9,000	8,000	
2	F 37	Lumbo-sacral angle	Bony (not proved)	31/5/52	1/12/52	250	Frame fixation	122 lb. (55·5 (kg.)	125 lb. (56·9 kg.)	133 lb. (60·5 kg.)	Uniform destruction of contiguous margins of L5 and S1; loss of disk space. No abscess visible	No further destruction. Some evidence of healing	,,	18	18	15,000	8,000	
3	M 18	Dorsal spine (D8–9)	,, ,,	31/5/52	1/12/52	200	,,	77 lb. (35 kg.)	84½ lb. (38·2 kg.)	92½ lb. (41·9 kg.)	Narrower disk D8–9. Small area of destruction lower margin D8. Small peri-spinal abscess shadow	No further destruction. No further loss in disk space. Lesion "hardening" a little	,,	55	40	9,000	7,000	Tuberculous pleural effusion remained unchanged
4	M 25	Lumbar spine L4–5	Bony (proved by culture of psoas abscess)	31/5/52	1/12/52	300	,,	124 lb. (56·4 (kg.)	138 lb. (62·8 kg.)	144 lb. (65·5 kg.)	Narrower disk space L4–5. Slight collapse of body of L4. Erosion of anterior part o upper margin of body of L5	A little further destruction of body of L5	,,	50	48	8,000	5,000	Psoas abscess present at onset continued to fill, and an abscess developed on the other side after 3 months' treatment
5	M 12	L. hip	Synovial (proved by biopsy of iliac glands)	31/5/52	1/12/52	200	,,	88 lb. (40 kg.)	103 lb. (47 kg.)	113 lb. (51·4 kg.)	Narrowing of joint space. Diffuse porosis	Some loss of joint space and increased porosis	Moderate	16	4	9,000	5,500	
6	M 11	L. hip	Bony (proved by iliac gland biopsy. Later by culture of pus from hip)	6/6/52	7/12/52	150	,,	59½ lb. (27 kg.)	70 lb. (32 kg.)	81 lb. (36·8 kg.)	Narrowing of joint space. Erosion of acetabulum with small sequestrum. Porosis of head	Further destruction of acetabular roof. Sequestration	Good	34	34	6,500	11,000	Developed abscess over hip after 3 months' treatment; it continued to fill, and pointed through an aspiration. Sinus persists. Organism *insensitive* to isoniazid after 5 months. Originally sensitive. General and local condition immediately improved on streptomycin after 6 months isoniazid
7	F 13	R. knee	Synovial (proved by biopsy)	6/6/52	7/12/52	200	Thomas and plaster gutter splints	94 lb. (43 kg.)	114 lb. (51·9 kg.)	132 lb. (60 kg.)	Diffuse porosis. No loss of joint space. No soft-tissue thickening on *x*-ray	Unchanged	Very good	10	3	10,000	5,000	
8	F 23	L. sacro-iliac	Bony (proved by culture of gluteal abscess)	13/6/52	14/12/52	250	Frame fixation	107 lb. (48·6 kg.)	110 lb. (50 kg.)	107 lb. (48·6 kg.)	Widening and porosis of left sacro-iliac joint	Porosis much less. Appearances of healing. Improved	,, ,,	55	27	8,000	5,500	Left gluteal abscess originally present was aspirated once and has *not* refilled. (Developed alopecia, thought *not* due to isoniazid)
9	M 20	L. knee	Bony (proved by aspiration of knee and culture)	13/6/52	14/12/52	300	Thomas and plaster gutter splints	138 lb. (62·7 kg.)	150 lb. (68·2 kg.)	182 lb. (82·7 kg.)	Loss of joint space. Erosion of articular surfaces of tibia, femur, and patella	No further destruction. Lesion "hardening" with much clearer definition	Good	19	4	9,000	5,000	Thick pus was aspirated from the knee-joint before treatment began
10	M 24	Dorsal spine (D9–10 and D11–12)	Bony (not proved)	27/6/52	26/12/52	300	Frame fixation	131 lb. (59·5 kg.)	137 lb. (62·1 kg.)	135 lb. (61·3 kg.)	Loss of disk space D9–10 and D11–12. Collapse of bodies of D9–10–11–12, with erosion of anterior margins. Paravertebral abscess	Slight collapse of D9 body with further destruction on right side	Moderate	10	4	7,000	8,000	
11	F 14	L. hip	Synovial (proved by iliac gland biopsy)	25/7/52	29/1/53	150	,,	70 lb. (31·8 kg.)	81 lb. (36·8 kg.)	87 lb. (39·5 kg.)	Narrowing of joint space. Diffuse porosis	Slightly narrower joint space, but no destruction. Considerable porosis	Good	12	4	6,000	9,000	
12	M 45	L. hip	Bony (proved by culture of abscess pus	1/8/52	3/2/53	300	,,	131 lb. (59·5 kg.)	115 lb. (52·3 kg.)	146 lb. (66·3 kg.)	Loss of joint space. Erosion of head. Tendency to subluxation. Gross osteoporosis	No further erosion or tendency to subluxate. Evidence of healing. Improved	,,	47	44	6,000	8,000	Abscess developed in thigh during last month of isoniazid therapy

Summary of Cases—continued

Summary of Cases—continued

Case No.	Sex and Age	Site of Lesion	Type of Lesion	Treatment		Iso-niazid (mg./day)	Other Treatment Given	Weight			X-ray Appearances		General Response to Treatment	E.S.R. (mm./hr.)		White-cell Count		Comments
				Began	Ended			Before Treatment	After 3 Months	After 6 Months	Before Treatment	After 6 Months		Before Treatment	After 6 Mths	Before Treatment	After 6 Mths	
13	M 15	Lumbar spine (L3–4)	Bony (not proved)	15/8/52	14/2/53	250	Frame fixation	126 lb. (57·2 kg.)	140 lb. (63·6 kg.)	150 lb. (68·2 kg.)	Narrowing of disk space L3–4. Erosion of both bodies anteriorly	Some collapse of bodies. Hardening of lesion. Improved	Good	21	14	5,000	6,000	
14	M 24	Lumbar spine (L4–5)	Bony (proved by culture from abscess)	15/8/52	14/2/53	350	"	150 lb. (68·2 kg.)	161 lb. (73·2 kg.)	170 lb. (77·3 kg.)	Narrowing of disk space L4–5. Erosion of anterior margin of bodies L4–5	Evidence of healing. Improved	"	12	5	6,000	7,000	Psoas abscess at commencement of treatment. Discharging sinus after 2 weeks and continued to discharge for 3 months
15	F 16	L. knee	Synovial (proved by biopsy)	22/8/52	26/2/53	300	Thomas and plaster gutter splints	127 lb. (57·8 kg.)	126 lb. (57·3 kg.)	146 lb. (66·4 kg.)	Diffuse porosis. No loss of joint space	No change	Poor initially. Then good	23	38	6,000	6,500	
16	M 5	R. hip	Synovial (proved by biopsy of hip)	13/9/52	14/3/53	100	Frame fixation	39 lb. (17·7 kg.)	28 lb. (12·7 kg.)	42 lb. (19 kg.)	Loss of joint space. Diffuse porosis	" "	Poor initially. Then moderate	32	5	8,500	9,000	
17	F 40	Lumbo-sacral angle	Bony (proved by bacteriology of lumbar abscess)	13/9/52	14/3/53	350	"	160 lb. (72·7 kg.)	158 lb. (71·8 kg.)	164 lb. (74·5 kg.)	Destruction of lower margin of L5. Loss of L5–S1 disk space	Lesion "hardening" well. No further destruction. Improved	Poor	30	18	5,000	5,000	Large lumbar abscess opened and drained after 3 months. Healed one month later. General condition much improved on streptomycin after 6 months' course of Isoniazid
18	M 34	Lower dorsal spine (D11–12)	Bony (not proved)	22/8/52	26/2/53	250	"	118 lb. (53·6 kg.)	126 lb. (57·3 kg.)	108 lb. (49·1 kg.)	Narrowing of disk space D11–12. Erosion of anterior border D12	"Hardening" of lesion. Some collapse. Evidence of healing	Moderate	38	27	7,000	7,500	
19	M 26	1. L. sterno-clavicular + 2. L. ankle joints	1. Bony (proved by culture of pus) 2. Synovial (not proved)	26/9/52	28/3/53	300	Bed rest and plaster cast below left knee	142 lb. (64·5 kg.)	154 lb. (70 kg.)	158 lb. (71·8 kg.)	1. Some widening of joint space. No bony erosion. 2. Generalized porosis	1. No change. 2. Porosis of ankle disappeared. No destruction	Good	11	2	6,000	7,000	Abscess over sterno-clavicular joint aspirated at onset. No recurrence
20	M 24	Lumbar spine (L1–2)	Bony (not proved)	19/9/52	20/3/53	350	Frame fixation	160 lb. (68·6 kg.)	172 lb. (78·2 kg.)	206 lb. (93·6 kg.)	Narrower disk space L1–2. Erosion of anterior margins of these bodies. Slight collapse of body of L1	Some further narrowing of disk space. Hardening of lesion. Improved	"	34	5	10,000	8,000	

knee, 4; dorsal spine, 3; sacro-iliac joint, 1; sterno-clavicular joint *and* ankle, 1. One dorsal spine lesion was accompanied by a tuberculous empyema. Three lumbar spinal lesions had produced palpable abscesses, and there was an abscess over the affected sterno-clavicular joint. No other complications were present when treatment was begun.

As soon as treatment was started the patients were immobilized and the affected bones and joints splinted exactly according to the time-honoured practice of the hospital. A full open-air regime was established, but the patients received no other anti-tuberculosis drugs and no operations were performed apart from biopsy and aspirations of abscesses.

Dosage of Isoniazid.—All patients received 5 mg. of isoniazid per kg. of body weight per day, in two divided doses regularly at 12-hour intervals. The various weights of the patients meant that the doses given ranged from 100 to 350 mg. per day. In most of the patients the body weight changed appreciably during treatment, but we did not adapt the dose to this change. The drug used was "tubomel," kindly supplied by Bengers Laboratories, Limited. For the first two months of treatment the concentration of the drug in the serum was checked at weekly intervals in 10 cases, the estimations being made by Messrs. Bengers. As it was found that the dose was constantly giving a level of between 1.15 and 2.3 mg. of isoniazid per ml. of blood plasma, the estimations were stopped after the first two months. This concentration was regarded as adequate. The drug was given continuously for six months in all cases.

Criteria Studied.—The course of the 20 cases was studied with regard to general health and well-being, body weight, local clinical condition, progress of the lesion as revealed by *x*-ray films, E.S.R., and sensitivity of the organisms in those patients in whom repeated study of this aspect was permissible. The patients were weighed and *x*-rayed at the beginning of treatment, after three months, and after six months. The E.S.R. (Wintrobe) and full blood counts were estimated at monthly intervals. Regular routine urine analysis and clinical examination completed the study. A careful watch was kept for toxic effects. It was not possible to establish a control series. It takes years to find a group of identical cases of bone and joint tuberculosis, and for the purposes of this purely pilot survey we thought controls unnecessary as well as unobtainable.

Results

Effect on General Health.—It is, of course, manifestly impossible to analyse the results obtained in 20 patients as one would those of a much larger series, but there is no doubt that an immediate and striking improvement

occurred in the general condition of 17. Many of these patients had been pale and miserable on admission. They immediately developed a sense of well-being, with an increase in appetite and a striking improvement in appearance. The three exceptions (Cases 15, 16, and 17) ultimately improved in the same way, though to a lesser degree, but their early response was disappointing. Neither a good response nor a poor one in those respects, however, gave any indication of what was happening to the local tuberculous lesion. In the 17 patients who looked so much better so soon, this improved in nine, remained apparently unchanged in five, and was actually worse in three. In the three patients who made a disappointing general response the local lesion improved in one and was apparently stationary in the other two.

Weight.—Fifteen patients, not all of whom had apparently improved in health, gained weight steadily and at the end of six months were anything from 11 to 46 lb. (5 to 21 kg.) heavier. Two (Cases 16 and 17) lost weight in the first three months and then recovered it, and ultimately exceeded their starting weights. One (Case 8) gained 3 lb. (1.4 kg.) in the first three months and then lost just as much in the second. Another (Case 18) gained 8 lb. (3.6 kg.) and then lost 18 lb. (8.2 kg.). One (Case 10) gained 6 lb. (2.7 kg.) in the first period and lost 2 lb. (0.9 kg.) in the second. Again, however, there was no apparent correlation between the gain in weight and the progress of the lesion itself. Gains of 18 and 21 lb. (8.2 and 9.5 kg.) went with local deterioration, and a net loss of 9 lb. (4 kg.) with improvement.

Abscesses and Sinuses.—Two of the four abscesses which were palpable when treatment started resolved after aspiration during the course of treatment. The third required incision: the wound was sutured after evacuation of the pus; it healed well. The fourth, originally palpable in one flank, increased in size so as to become palpable in both flanks, although the patient (Case 4) gained 20 lb. (9 kg.). One patient (Case 6) developed an abscess, which became a sinus during treatment despite a gain of 21 lb. (9.5 kg.) in six months and a good general response. Another patient (Case 12) developed an abscess three weeks after the drug was stopped, at which time his disease (a hip lesion) appeared to be much improved clinically and radiographically.

Changes in X-ray Appearances.—It is, of course, wellnigh impossible to judge, except very broadly, the progress of a tuberculous lesion in its early stages, as shown by *x*-ray films. Allowing, however, for this difficulty, we feel satisfied in saying that the films in 10 cases showed appreciable improvement. In seven there was no demonstrable change, and in three (Cases 4, 6, and 10) bone destruction advanced despite treatment. Case 6 is of sufficient interest to be described in detail (see below).

E.S.R.—This gave no indication of response. In most cases there was a slow fall over the six months, and in only one (Case 15) was the rate higher after that period.

Insensitivity.—Five patients had abscesses. The pus from one was sterile. Two others cleared up too rapidly for pus to be recovered more than once. In the fourth the organism was never grown in culture but produced tuberculosis in the guinea-pig (Case 4); and in the fifth (Case 6) relative insensitivity was demonstrated after five months' treatment. The abscess over the hip of a boy of 11 appeared after three months' treatment. After three and a half months the organism was sensitive to concentrations of 0.2 mg. per ml. after two weeks' incubation at 37° C., but after five months it was insensitive to 1 mg. per ml. and was inhibited only at a strength of 5 mg. per ml.

Toxic Effects.—One patient (Case 14) developed a rash after four months' treatment. Treatment was not stopped, and the rash disappeared in a week. Another's hair fell out (Case 8). We were unable to convince ourselves that these were toxic effects of the drug, and certainly no others were seen. The white-cell count fell in 9 cases, but never below 5,000 per c.mm. In 10 cases it actually rose.

Case Report

The patient was a boy of 11. Pain in the left hip and a limp had been first noticed in March, 1952. The diagnosis of tuberculosis of the hip had been proved by iliac-gland biopsy in another hospital and the patient was transferred to our care in June, 1952.

On admission he was a pale, thin boy, weighing 59½ lb. (27 kg.). His left hip showed a flexion-abduction deformity, with a good deal of soft-tissue thickening around and in front of the trochanter, and marked pain and spasm on attempts at movement. No abscess was palpable. The biopsy scar in the left iliac fossa was well healed.

A radiograph of the hip showed narrowing of the joint space, porosis of the head of the femur, and a little erosion of the roof of the acetabulum. His E.S.R. was 36 mm. in the first hour (Wintrobe).

The child was splinted on a Robert Jones abduction frame, nursed in the open air, and given 150 mg. of isoniazid daily. After three months his general appearance was much improved, he had gained 11 lb. (5 kg.), but a radiograph of the hip showed further destruction of the acetabular roof, with sequestration. Four months after the beginning of treatment an abscess became apparent and 30 ml. of thick pus was aspirated. *M. tuberculosis* was recovered from this pus, the organism being found to be sensitive to isoniazid at a concentration of 0.2 mg. per ml.

The blood concentration of isoniazid during the first two months of treatment had shown that the dose given was producing a concentration of 1.3 mg. per ml. but, despite the fact that a sensitive organism was receiving an apparently adequate dose of the drug, the disease continued.

The abscess was aspirated five times during the next two months and, despite all precautions, a sinus appeared in December, 1952. In November, 1952, the sensitivity of the bacillus had been reduced so that it was now sensitive only to a concentration of 5 mg. per ml. This concentration was not being obtained.

Gain in weight continued; so did destruction of bone, as shown by the radiograph. After six months isoniazid was discontinued and streptomycin with P.A.S. was given. The E.S.R. rapidly fell to 16 mm. in one hour, the next radiograph showed arrest of the bone destruction, and the sinus began to dry up. By June, 1953, the sinus was healed, the hip lesion quiescent, and the patient's general condition very good.

Comment.—This case is quoted in detail particularly because it illustrates our firm impression that isoniazid alone did not appear to make very much difference, at least during the six months in which it was being given. Even in the cases which improved we felt quite convinced that that improvement was no greater than we would have expected in the days when treatment would have consisted of fixation in the open air without chemotherapy. We were never convinced that the improvement was as great as would have occurred had streptomycin been given instead of isoniazid.

General Conclusions

We do not want to attach too much importance to this small experiment, which we regard as nothing more than a guide to future work, but our impression from these 20 patients is that isoniazid alone is no magical cure for early uncomplicated skeletal tuberculosis, and after six months of its use we felt we could no longer withhold the more certain benefits of streptomycin from our patients. Our original question was, Can anything remarkable be expected from this new drug in six months in circumstances as near ideal as possible? The answer in this series of cases was "No."

Summary

Twenty patients with early uncomplicated tuberculous lesions of bone and joint were treated with recumbency, splintage, an open-air regime, and isoniazid, 5 mg. per

kg. per day, for six months. Neither streptomycin nor *p*-aminosalicylic acid, nor any other drug, was used during this period. There was an almost regular improvement in general health, a gain in weight was usual, but the local tuberculous lesions fared no better and no worse than we would have expected had no drug been used.

We wish to record our gratitude to the members of the consultant staff of the Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, who transferred to our care patients whom we thought suitable for this therapeutic trial; and also to Bengers Laboratories Ltd., for supplies of the drug and for the performance of most of the chemical tests and tests of sensitivity.

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MASSIVE LEFT ATRIUM AND MITRAL VALVOTOMY

BY

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The frequency with which massive (aneurysmal) dilatation of the left atrium in rheumatic mitral valve disease is associated with predominant mitral incompetence (Parsonnet *et al.*, 1946; Daly and Franks, 1949) has been a factor against attempting mitral valvotomy in such cases (Baker *et al.*, 1952). The case reported here is of interest in that the physical signs were purely those of mitral stenosis, which was confirmed at and relieved by a subsequent valvotomy.

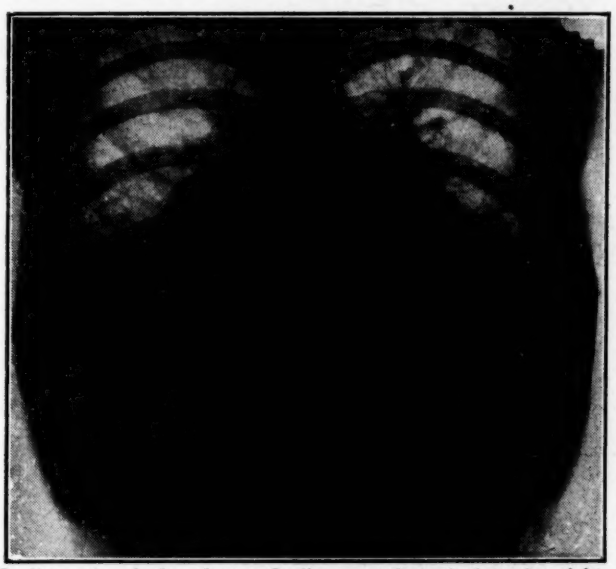
Case Report

The patient, a nulliparous housewife aged 33, gave no history of rheumatic fever. Her heart lesion was first discovered at a National Service medical examination at the age of 23. By the age of 26 she had begun to be aware of dyspnoea on exertion and to have recurrent attacks of winter bronchitis. Her effort tolerance steadily decreased; from the age of 30 onwards she rarely left her second-floor flat because of inability to walk upstairs or more than 50 yards on the level. She used extra pillows at night, but had had no nocturnal attacks of dyspnoea. There had been no haemoptyses, nor congestive cardiac failure with oedema. She had atrial fibrillation, which was presumed to have been present for some years, for she had had a cerebral embolism at the age of 28 and had been on digitalis since the age of 25.

On examination she was very thin, with a pronounced mitral facies, and was dyspnoeic talking at rest. The pulse was of moderate volume, and the blood pressure was 125/80. The jugular venous pressure was not raised and showed no abnormal pulsation. The apex was in the fifth space outside the mid-clavicular line and was tapping in character. There was a widespread systolic heave to the left of the sternum The first heart sound was loud and abrupt; the second sound was increased in the pulmonary area, with first-degree splitting; there was a very loud mitral opening snap, and a long rumbling grade 3 mitral diastolic murmur at the apex. Systolic murmur was not heard. She had impaired resonance to percussion over the right lower chest posteriorly. There was no hepatic enlargement or pulsation.

Radioscopy of the chest showed a large dense heart shadow, mainly due to gross enlargement of the left atrium (see Fig.). No pulsation of the atrium was apparent in either the anterior or the oblique views. The pulmonary arteries were considerably enlarged; the aortic knuckle could not be clearly distinguished; and no calcification of the valve cusps was detected. The electrocardiogram (multiple unipolar leads) showed atrial fibrillation and considerable right ventricular preponderance.

At cardiac catheterization the following observations were made at rest:—Pressures (in mm. Hg to mid-point of chest): right atrium, mean 4; pulmonary artery, 52/26, mean 34; pulmonary capillary, 23/18, mean 20. Cardiac output,



Radiograph of the chest. Radioscopy showed that the right border of the heart in this view is formed by the left atrium, which owing to its size and density obscured the outline of the right atrium.

2.4 litres a minute. Cardiac index, 1.7 litres/sq.m./min. Blood oxygen saturation: pulmonary artery, 59%; brachial artery, 96%. Blood oxygen combining power, 17.7 ml./100 ml. Calculated pulmonary arteriolar resistance, 560 dynes/sec./cm.$^{-5}$

As her disability was considerable and her physical signs were those of mitral stenosis, mitral valvotomy was carried out by Mr. R. C. Brock on January 21, 1954. The pressure in the pulmonary artery was 48/27, mean 34 mm. Hg; and in the left atrium was 25/19, mean 21 mm. Hg. The enormous size of the atrium was confirmed. A large amount of old and recent thrombus was encountered in the appendage and in the body of the atrium, much of which was washed out by permitting free bleeding. It was regarded as impracticable to attempt to remove all clot from the atrium. Embolism of the carotid vessels was guarded against by occluding them by tapes while the valve and deeper parts of the atrium were explored. To the examining finger the valve orifice appeared to be about 4 mm. in diameter; the edges were fibrous, but no calcium was felt in the cusps; no regurgitation could be detected. Complete separation at both commissures was effected by means of a valvotome. The chordae tendineae were fibrous and fused, but the cusps opened completely at the medial commissure and partly at the lateral commissure. The resulting valve orifice was large and there was a little regurgitation.

Three weeks after the operation she was able to walk up three flights of stairs; at the time of writing her exercise tolerance was still improving.

Comment

The case of massive left atrium reported by Parsonnet *et al.* (1946) showed gross rheumatic mitral incompetence at necropsy. A review of the reported rheumatic cases suggested that this association was invariable, and they concluded that mitral incompetence was a causal factor in the production of massive left atrium, and that mitral stenosis was not. Similarly, Daly and Franks (1949) found clinical evidence of mitral incompetence in all their 15 cases of massive left atrium.

It is generally agreed that the severe fibrosis and loss of muscle fibres seen in the atrial wall in this condition are evidence of particularly severe local damage from the original rheumatic process, and that this is the prime causal factor of the extreme dilatation. Observation that the pressures in the left atrium are as high in mitral stenosis as in mitral incompetence (Venner and Holling, 1953) suggested that mitral incompetence need not be a concomitant factor, and it was of particular interest to observe this patient, in whom the physical signs were clearly those of mitral stenosis and in whom the left atrial pressure (at operation) was only moderately increased.

The diagnosis of mitral incompetence is difficult, and many of the accepted physical signs are unreliable, especially when there is also stenosis—although it seems to be general experience that where the physical signs are purely those of mitral stenosis alone (tapping apex beat, slapping first heart sound, mitral opening snap, rumbling apical mid-diastolic murmur), incompetence of an important degree is not found at operation. The case reported here offers a further illustration of this point and also shows that massive dilatation of the left atrium is not unequivocal evidence of mitral incompetence. In rheumatic heart disease both massive left atrium and gross mitral incompetence appear to result from a particularly severe rheumatic injury and their observed association probably depends on this fact alone.

I wish to thank Dr. C. G. Baker and Mr. R. C. Brock for encouragement to prepare this report.

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INTRA-ARTERIAL THERAPY IN OCCLUSIVE VASCULAR DISEASE

BY

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Degenerative arterial disease of the lower limbs produces intermittent claudication, ischaemic necrosis, or both. At the present time it is not possible to reverse this degenerative process. Consequently, treatment aims at the opening up of a collateral circulation and the abolition of sympathetic tone. Since occlusive vascular disease affects all the vessels in some degree, the best that can be hoped for is the maximal dilatation of all the arteries in the limb. In order to obtain the greatest local effect without a general vasodilatation, injection of drugs direct into the femoral artery has been advocated. Trying a series of drugs, Edwards *et al.* (1952) found papaverine and tolazoline (benzyl-imidazoline, or "priscol") to be most effective in their action, and reported some success in the treatment of these cases.

Selection and Technique

The present investigation was deliberately kept on an entirely clinical basis, as the object was to assess the value of these two drugs as a routine method of treatment in a busy peripheral vascular clinic. No attempt was made to measure the effects instrumentally by temperature change, oscillometer, or claudicometer. It was thought that if such therapy was to be of practical value it must produce symptomatic improvement. With this in mind the following procedure was adopted. Any patient arriving at the peripheral vascular clinic suffering from intermittent claudication or ischaemic necrosis due to occlusive vascular disease was, without selection, started on a course of injections. The first 20 were given papaverine and the next 20 tolazoline. Both legs were treated when both were the subject of complaint. The course consisted of one injection a week into each artery for six consecutive weeks. The amounts used were papaverine 40 mg. in 20 ml. of saline and tolazoline 100 mg. in 20 ml. A 20-ml. syringe fitted with a No. 17 B.W.G. needle which had been ground down to a short bevel was used and the injections were made into the femoral artery immediately below Poupart's ligament. After a little practice no difficulty was experienced in the introduction, the injection being made against the flow of the blood. No local analgesic was used, and the patients were allowed to travel home shortly after the treatment. No untoward happenings occurred.

The sex and age groups of patients in the series are shown in Table I.

TABLE I.—*Sex and Age Groups of Patients*

Drug	Male	Female	Age Range			70+
			40–49	50–59	60–69	
Papaverine ..	18	2	2	8	7	3
Tolazoline ..	16	4	2	9	8	1

Results

Immediate Effect.—On making the injection most patients showed a rapid response with a local flush. This was most pronounced in the thigh, and almost always demonstrated the territory of the superficial external pudendal artery by a flush over the pubes. However, the extent down the limb varied, as did the patient's impression of warmth. In some it went as far as the knee; in others it included the whole limb. With tolazoline a general vasodilatation rapidly followed, and often shivering. The local flush was quite transient, lasting between 10 and 30 minutes. After this the patient felt quite normal. These injections were made by four different workers.

Assessment of the result was made by seeing the patient two weeks after finishing the course and again a month later. In the case of intermittent claudication he was asked how far he could now walk, and he was allowed to compare this with some definite distance he had to walk during the day. His own estimate had already been recorded before starting treatment. Usually it was possible to find how far he walked without pain first thing in the morning—for example, on going to work. In assessing these results alleged improvements or deteriorations of a few yards were neglected—bearing in mind the stated object of the inquiry. Again four persons were engaged in the assessing. In ischaemic necrosis the healing was taken as the criterion, local treatment being confined to a dry dressing and crêpe bandage.

TABLE II.—*Response in Intermittent Claudication*

Drug	No. of Cases	Immediate Flush to Toes	Final Improvement
Papaverine ..	15	9	0
Tolazoline ..	13	7	2
Total ..	28	16	2

TABLE III.—*Response in Ischaemic Necrosis*

Drug	No. of Cases	Immediate Flush to Toes	Final Improvement
Papaverine ..	5	5	5
Tolazoline ..	7	5	4
Total	12	10	9

Tables II and III summarize the results in intermittent claudication and ischaemic necrosis respectively.

Discussion

Although this series was kept small because of the possible consequences of repeated arterial puncture, I feel that the results are significant. It seems that in intermittent claudication the benefits do not warrant this treatment. In ischaemic necrosis it would appear to be a worth-while procedure, especially as it can be performed in an out-patient clinic. Moreover, it seems to be a good alternative to lumbar sympathectomy, and can, of course, be applied to patients unfit on general grounds for a major operation. However, the results seem to suggest that the mechanism is just like that of sympathectomy in that the skin receives more benefit than the muscles; and this observation agrees with the findings of Lynn (1950), although he quotes Dr. H. T. C. Swan as having found increased blood flow in the sympathectomized hand after intra-arterial injection. Perhaps, too, the explanation lies partly in the transience of the response, the healing of an ulcer being helped even by a short-lived increase in blood supply. Indeed, Wilson and Quash (1951), studying the effects of tolazoline, also came to the conclusion that it was valuable in the treatment of refractory leg ulcers. It is worthy of note that Douthwaite and Finnegan (1950) were impressed by the results of oral tolazoline in patients with intermittent claudication.

It would be interesting to compare the results of intra-arterial injection with those of lumbar sympathetic block with phenol in the cases of ischaemic necrosis. Such a series is at present being investigated, but, of course, takes a longer time to complete, as ischaemic cases are less frequent than those with intermittent claudication.

Summary

A series of cases is described in which obliterative arterial disease of the lower limb has been treated by intra-arterial injections. Broadly, two groups of cases arise, one complaining principally of intermittent claudication and the other of ischaemic necrosis. The drugs used were papaverine and tolazoline. The results are assessed on a clinical basis with a view to finding a practical line of therapy.

The opinion is expressed that in intermittent claudication the method is not warrantable, whilst in ischaemic necrosis it may be a valuable adjunct to local treatment.

I wish to thank Mr. Clifford Jones, in whose peripheral vascular clinic this work was carried out, for his help and encouragement; and Mr. H. Ellis, Dr. F. Lothe, and Dr. H. W. Chambers for practical assistance.

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The Minister of Health, Mr. IAIN MACLEOD, speaking at the annual luncheon of the Hotel and Catering Institute in London, said that he was looking to hospital authorities to give a lead in standards of cooking and kitchen hygiene. He was pleased to say that the national scheme for training apprentice cooks in hospitals was getting off to a good start. Although the hospital authorities were only given details of the scheme in March, preliminary inquiries had already been received from over 80. Some idea of the extent of catering in hospitals could be gained from the budget for food in hospitals in England and Wales, he continued. In the year 1952–3 the cost was over £30m., or about one-eighth of the total expenditure of the hospital authorities. In addition, the wages of catering officers, dietitians, and other senior catering staff amounted to nearly £7m.

Medical Memoranda

Ulcerative Stomatitis Associated with Symptoms of Peptic Ulcer

The following case is of interest from both a diagnostic and a therapeutic point of view, and is one which I have had the opportunity of observing over a long period.

CASE REPORT

A woman aged 56 had had intermittent indigestion for many years. Her pain was epigastric, occurred half to one hour after food, was increased by meat, soups, and any form of alcohol, and was relieved by alkalis. There were periods of freedom, and the picture appeared to be typical of peptic ulceration. The blood count was normal. This diagnosis was reinforced by the family history. Her father had had a gastro-enterostomy for duodenal ulcer, a paternal uncle had died of a perforated duodenal ulcer, and two paternal cousins had had duodenal ulcers, in one of whom the ulcer had perforated. On the other hand, a paternal grandfather had died of pernicious anaemia.

Eighteen months previously the patient had developed ulcers of the mouth and tongue. At first they were intermittent, but later the exacerbations became so frequent that she was never entirely free. She could not eat with comfort, and spiced foods, vinegar, and alcohol produced considerable distress. During this period the indigestion also became worse, and invariably followed a heavy meal. Six months later she had agreed to have a barium meal and a gastric analysis. The *x*-ray film showed no abnormality and the gastric analysis a complete achlorhydria. Hydrochloric acid was given, but was soon abandoned as it increased the dyspepsia, which indeed continued to be relieved by alkali. The ulceration of the mouth got worse and nothing gave any relief, although the pain subsided temporarily with an akaline mouth wash.

Two months ago I decided to try vitamin B_{12}, which was given in the form of "cytamen." At first she had an injection of 50 μg. (1 ml.) twice weekly; this was reduced to 1 ml. a week and eventually to 1 ml. a fortnight. Within a few days the ulcers had improved and in a week they had disappeared and have never returned. The indigestion also improved and she was able to take a normal diet and an occasional glass of sherry without any discomfort. She felt better than she had been for many years.

COMMENT

In this case all the symptoms suggested peptic ulcer, but the *x*-ray examination was negative and achlorhydria was present. There was an ulceration of the mouth and tongue, which was intermittent as in peptic ulceration. The family history of duodenal ulcer suggested that hyperchlorhydria was present in many members. On the other hand, the history of a grandparent who suffered from pernicious anaemia is evidence of another hereditary factor which produces an achlorhydria.

The theory I would put forward is that in my patient the two factors were present, but the tendency to ulceration was kept in check by the absence of acid, which prevented any gross and demonstrable ulceration from occurring. The administration of acid undoubtedly increased the indigestion, and it is probable that it would have led to frank ulceration if it had been persisted in. The simultaneous appearance of ulceration in the mouth and the increase in the indigestion, together with the immediate relief of both by vitamin B_{12}, suggests that the superficial ulceration of the mouth was associated with a similar condition in the stomach, and that the cause of both was the absence of some constitutional factor which was replaced by the injection.

The temporary relief from the indigestion brought about by alkali cannot be explained by neutralization, but was due to some other cause, and its action was similar to that

experienced in the relief of pain from ulcers in the mouth. I would suggest that a trial of vitamin B_{12} might be helpful in the early stages of peptic ulceration.

T. H. OLIVER, M.D., F.R.C.P.

Bronchial Adenoma

Adenoma of the bronchus, a relatively rare condition occurring in approximately 6% of all bronchial tumours (Kramer and Som, 1935), is often not diagnosed for a considerable time after the onset of symptoms. The following case occurring in general practice is reported as a reminder of the disease and to record its unusual features.

CASE REPORT

A housewife aged 67 was in good health until April, 1952, when she developed a mild respiratory tract infection with an irritant cough, producing a symptom described by the patient as "like a bell ringing" in her chest. The illness resolved in 14 days with only symptomatic treatment. She became well and symptom-free, apart from slight loss of weight. Four months later (August) she developed a similar though more severe illness, with continued fever (maximum temperature 103° F.—39.4° C.), irritant cough, and a little sputum. Physical signs of right lower zone bronchopneumonia developed. Her condition was not improved after a course of "sulphatriad," and her fever and physical signs resolved slowly during the next two weeks, after six daily injections of procaine penicillin, 300,000 units.

Chest *x*-ray examination as soon as she was ambulant, 18 days after the onset of symptoms, showed a rounded shadow adjacent to the right hilum, with no apparent peripheral collapse. There was no relevant past history or family history; she was an occasional smoker (one or two cigarettes a day).

On September 17 she was seen by Mr. O. S. Tubbs, who found no abnormal physical signs. Two weeks later, while awaiting admission for investigation, she suddenly collapsed in her home with acute pain in her right lower chest. On examination shortly afterwards she was found to be collapsed and dyspnoeic, her pulse was 90, temperature 98° F. (36.7° C.), respirations 26. The trachea was displaced to the left, and physical signs of a right pleural effusion were present. Chest *x*-ray examination confirmed the findings of collapse of the right middle and lower lobes, with an effusion.

She was admitted urgently to the Thoracic Unit, St. Bartholomew's Hospital, where diagnostic aspiration of the effusion in three places produced blood only. The sputum showed no tubercle bacilli, and grew only a scanty growth of *Neisseria catarrhalis*.

Bronchoscopy (Mr. O. S. Tubbs) showed: "Protruding out of the right middle lobe bronchus was a small pale-pink cherry-like tumour. The bronchoscope could be passed beyond this into the lower lobe, which appeared normal. Biopsy specimen taken; rather profuse bleeding." The histological report on this specimen is of a "poorly differentiated adenocarcinoma."

At thoracotomy five days later a massive—2–3 pints (1–1.5 litres)—heavily blood-stained effusion was found, thought probably to be due to pleural carcinomatosis in view of the biopsy report and clinical picture presented. Accordingly, a right pleuropneumonectomy was performed.

The patient made an uninterrupted recovery, and was discharged from hospital 15 days later. She has remained well since.

It was subsequently evident from examination of the specimen that haemorrhage had occurred into the middle lobe behind the tumour, and that the middle lobe itself had ruptured, causing considerable haemorrhage into the pleural cavity. This undoubtedly occurred two weeks before her operation, and had caused her collapse in her home and her subsequent sudden deterioration at that time.

Pathology.—The tumour measured 7 by 6 by 5 cm. The only remaining lung tissue of the right middle lobe was a portion of the medial segment and a thin peripheral zone stretched over the tumour mass. Anteriorly there was a rupture of the middle lobe and visceral pleura, with haemorrhage into the adjacent rim of lung tissue and into the pleural cavity. Histologically, the tumour was found to be projecting into the lumen of the bronchus, to have an adenomatous appearance, and to show no infiltration of deeper structures. The specimen was examined at the Institute of Diseases of the Chest, Brompton, London, and five different opinions were given: (1) Columnar-celled carcinoma of the bronchus; (2) bronchial adenoma of low-grade malignancy, or possibly secondary malignant change in pulmonary adenomatosis; (3) benign adenoma; (4) malignant adenoma; and (5) adenoma.

COMMENT

Adenoma of the bronchus is slightly commoner (62%) in females (Foster-Carter, 1941). Symptoms may occur at any age, the average age of onset being 28. Diagnosis is most commonly made during the fourth decade, an average of five years after the onset of symptoms (Foster-Carter, 1941). Cough, haemoptysis, and symptoms due to bronchial obstruction and its sequelae are predominant.

Radiological evidence of bronchial obstruction and/or the presence of an opaque tumour point to the diagnosis, which must then be confirmed by a bronchoscopic biopsy. The tumours are more commonly in the main bronchi, and therefore relatively accessible to the bronchoscope. Histologically the precise nature of the tumour is often difficult to assess, and differences of opinion are common. The cells are usually uniform in shape and size; the cytoplasm is clear, and forms a fringe round the large deeply staining nucleus.

The tumours should be regarded as borderline between innocence and malignancy (Jackson and Norris, 1951). They may be locally invasive, and, very rarely, metastases have occurred through lymphatics (Adams *et al.*, 1942). Malignant adenocarcinoma developing in an adenoma has been demonstrated histologically (Umiker and Storey, 1952).

Treatment of this potentially malignant condition varies from pneumonectomy, lobectomy, resection of the bronchus with end-to-end anastomosis (D'Abreu and MacHale, 1952) to piecemeal bronchoscopic resection, varying with each individual case. Opinion is now more in favour of exploratory thoracotomy and lobectomy as the operation of choice (Delarue, 1951). Radiotherapy is not of proved value in treatment (Jackson and Norris, 1951).

I wish to thank Mr. O. S. Tubbs for permission to publish his case notes, and for his help and encouragement; Dr. G. J. Cunningham, senior lecturer in morbid anatomy, St. Bartholomew's Hospital; and the Department of Pathology, St. Bartholomew's Hospital, for the preparation of slides.

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The United States Armed Forces Institute of Pathology is to collaborate with a group of Japanese pathologists headed by Dr. TORU MIYAJI, professor of pathology at the Osaka University Medical School, in preparing a Japanese textbook on histopathology. The Institute will contribute about 300 standard photomicrographs to illustrate typical pathological conditions. The textbook is for use by Japanese medical students. Co-operation from the United States was requested for illustrations because of the difficulty of obtaining such material in the Far East. The project is expected to be completed within six months.

Reviews

THE VIRUS FRONT

Advances in Virus Research. Volume I. Edited by Kenneth M. Smith and Max A. Lauffer. (Pp. 362; illustrated. $8.) New York: Academic Press Inc. 1953.

The problem of keeping abreast of the literature of any subject these days is one with which everyone engaged in medical research is only too familiar, but it is probably true to say that virus workers face this problem in its most acute form. Viruses are the cause of disease in animals and plants as well as in man; they are susceptible of investigation by a variety of scientific disciplines and their literature is widely scattered through a large number of journals. It is difficult, therefore, for the virus worker to keep himself widely informed of what is happening in all fields of virology, and it is with a view to remedying this that *Advances in Virus Research* is being produced. It is planned to publish in successive volumes authoritative review articles on all important aspects of virus research, and it can safely be predicted that if the standard set by Volume I is maintained in the rest of the series the editors will have amply achieved their object.

This volume begins with an article on the properties of the bacteriophage by H. T. Epstein which is especially valuable, since these viruses and their bacterial hosts have been used extensively for the study of problems concerned with host–virus relationship and in particular the nature of virus multiplication; in fact our views on this latter question have been largely coloured by the findings obtained with the bacteriophage. The interaction between viruses and virus strains, which include the interference phenomenon, is considered by C. W. Bennett; there is much of interest here, even though the illustrative examples are drawn almost exclusively from plant pathology. Another section by a plant pathologist is on the role of leaf hoppers in the transmission of plant viruses by L. M. Black, and, following this, G. H. Bergold provides a most instructive and beautifully illustrated account of insect viruses. This is of particular value, since there is probably no aspect of virology of which those who work with animal viruses are more ignorant. It is interesting to note how these viruses resemble the influenza viruses in the possession of both spherical and rod forms; it is also of interest that the author seems in no doubt as to the nature of these insect viruses—for him they are micro-organisms.

Of the viruses peculiar to man those of influenza and poliomyelitis find a place in this volume. Henle writes of the multiplication of influenza virus, and a first-class article it is. It is, of course, well known that a great deal of the work on this subject has been done by Henle and his colleagues, so the excellence of this particular section is not surprising. What is particularly attractive about it is the detached and unbiased way in which the author examines the evidence and draws his conclusions, which is by no means invariably the case in writings on this highly controversial subject. A most valuable article on poliomyelitis comes from J. L. Melnick, who has been in the forefront of research on this disease and its causal viruses during the last ten years or so. The volume is completed by a section on the purification and properties of animal viruses contributed by Dr. Gordon Sharp, and a short but most interesting account of virus nucleic acids by Roy Markham.

S. P. BEDSON.

INTERPRETATION OF AGGRESSION

Aggression and Its Interpretation. By Lydia Jackson, D.Phil., B.Sc.(Oxon.). Foreword by Felix Brown, D.M., M.R.C.P. (Pp. 237. 21s.) London: Methuen and Co. Ltd. 1954.

Miss Jackson has built up a considerable body of experience of child therapy which fully justifies her in writing a book. Moreover, she has added to her clinical statement a comparative study of three groups of children based on her particular form of projection test.

While the reviewer can recommend this book for reading and for study, there is a peculiar difficulty arising out of the fact that Miss Jackson, while choosing to write on the subject of aggression, has "scotomized" the pioneer work which has enabled psycho-analysis and psychotherapy in general to take aggression into account. It is well known that it is through the work of Melanie Klein, dating from about 1923, that the theory underlying our work has come to include destructiveness and aggressiveness and the complex relationship of these to the erotic instinctual life. There is a complex theoretical construction here which covers the origin of guilt feelings and the important relationship of restitution tendencies to aggressive ideas, to which the author refers. It is certainly not necessary for Miss Jackson to agree with the Klein development of psycho-analytic theory, but it is not possible, in writing a book on aggression, simply to ignore this work and to give 38 references without mention of Mrs. Klein.

An intuitive flash of the author quite possibly goes very deep: "the primary, powerful innate urge to self realization as the basis of aggression."

As the author is apparently unaware of the theory of the very complex early development of the child, she is thrown back on the idea of the transformation of the child's destructiveness and hostility into constructive and friendly co-operation as something that results from the friendliness and tolerance provided by the therapist. One thoroughly believes in her results, which in some cases have been good, but Miss Jackson's theory as stated in this book appears to the reviewer to be deficient. One consequence of the naïveté of her theory as it is stated is that the author seems to leave out the important subject of aggressiveness related to paranoid organizations.

D. W. WINNICOTT.

INTRODUCTION TO TROPICAL PATHOLOGY

An Introduction to Pathology and Bacteriology for Medical Students in the Tropics. By the late E. C. Smith, B.A., M.D., D.P.H., Sc.D.Dubl., M.R.C.P.Lond., M.R.C.P.I., D.T.M.&H.Eng. Second edition. Revised by R. Kirk, O.B.E., B.Sc., M.D., D.P.H., F.R.F.P.S.Glas., M.R.C.P. Lond., F.R.S.Ed. (Pp. 390; 78 figures and 18 coloured plates. 50s.) London: Staples Press Ltd. 1953.

The harassed student is often at a loss to know just how much he is expected to learn for his examinations. Lecture notes are apt to be sketchy and disjointed, while the standard textbook is too elaborate and detailed to be easily mastered. Kirk's revision of Smith's *Introduction to Pathology and Bacteriology* can justly claim to fill the gap, being practical rather than academic, and neither too long nor too short. It is eminently readable and lucid, and is sufficiently detailed to provide the student with a sound background which will enable him, when the time comes, to make intelligent use of more advanced textbooks. The illustrations are numerous and clear, and the arrangement of the chapters logical. The first four deal with pathological processes and tumours; the next fourteen, with the pathology of diseases caused by infective agents of all kinds, which is of course the predominant type of illness in the Tropics. The last four chapters are devoted to the special pathology of certain organs and systems. Although the descriptions of the different conditions are necessarily brief, it is obvious that they have been written by someone with a wide practical knowledge of the subject. All the more important details are emphasized, and little that is of practical importance is omitted. The chapters on fungal, protozoal, and helminthic diseases deserve special mention, and within the space available give a well-balanced account of the pathological changes in and the diagnosis of these infections. An appendix in which the various causes of lymphadenopathy are tabulated will be of much practical use, and another on post-mortem technique should go a long way to improving the standard of necropsies when these have been carried out by someone with little previous experience.

This book can be strongly recommended not only to medical students in the Tropics, for whom it is written, but to anyone who may need a succinct and reliable account of the pathology of tropical diseases.

J. S. K. BOYD.

NEUROANATOMY

Human Neuroanatomy. Third edition, revised. By Oliver S. Strong and Adolph Elwyn. (Pp. 481; 357 illustrations. 57s. 6d.) London: Baillière, Tindall and Cox. 1953.

A book is obviously meeting with a demand when it reaches its third edition and has had no fewer than four reprints of its earlier editions. The present volume has undergone much judicious revision, for which, presumably, Dr. Elwyn was responsible, as his name alone is attached to the preface. There has been much re-writing and some expansion, including the introduction of a number of new and useful figures. The advances in neuroanatomy and neurophysiology made during the past ten years have been handled with discretion, and are woven rather than intercalated into the text. Consequently the staccato effect, so obvious and so irritating in many revisions, is pleasantly absent. A sense of proportion, too, is shown in the manner in which the more recent contributions have been handled, and the bibliography, though extensive, is judiciously selected. Some parts of the text, however, notably that on the olfactory system, would benefit from even more revision.

A good feature of this text is the attempt to link up the central nervous anatomy with the arrangements in the periphery. That this attempt is not always satisfactory is in the nature of things not surprising, and some attention to the figures, which are not always lucid or well considered, meant to demonstrate the integration of centre and periphery would make the book more useful. For example, Figs. 141 and 142 both show the brachial plexuses, but they show absences of correspondence that are bound to be confusing to the student; indeed, Fig. 142 contains the error of deriving the thoracodorsal and long thoracic nerves from the medial cutaneous nerve of the arm.

But it would be churlish to end this brief review with a critical note. The volume under consideration is one example of the contemporary attempt to bridge the gap between our knowledge of the structure of the nervous system and established facts and suspicions about its function. That such attempts should at this stage of the integrative process be, in some degree and in certain directions, faltering is not surprising. The important thing is that the integration is made, and in due course the details will doubtless sort themselves out. Certainly no student will be at a disadvantage for having read this new edition of Strong and Elwyn, and some teachers might even find it advantageous.

J. D. BOYD.

NEUROLOGY AND PSYCHIATRY

Physiological Foundations of Neurology and Psychiatry. By Professor Ernst Gellhorn, M.D., Ph.D. (Pp. 556. $8.50 or 68s.) Minnesota: University Press. London: Geoffrey Cumberlege. 1953.

The subject-matter of this volume is intentionally far more restricted than is indicated by its title and depends on the interests of the author, who states in his preface: "By no means all, but only some, physiological foundations of neuropsychiatry are treated, those with which the writer is familiar through his own experimental work." Thus certain subjects are considered at greater length than their importance in clinical neurology and psychiatry would warrant—for instance, the autonomic nervous system and the physiological foundation of carbon dioxide therapy. On the other hand, there is no mention of some problems which are often encountered in practice and which in addition have a well-understood physiological basis: in this category migraine and the premenstrual tension state come to mind.

This intentional restriction of choice of subject-matter, however, is of less importance than the limitations of approach due to the disproportionate consideration of the results of animal experiment. These limitations are of particular importance in this field of inquiry, since few neurological and probably no psychiatric disorders can be adequately reproduced in animals. Thus, to take the instance of E.C.T., it is doubtful what relevance the physiological response of a normal animal may have to the psychological response of a patient suffering from an endogenous depression. The author has failed to take advantage of one way of overcoming these limitations—namely, by drawing upon clinical neurology, whether for illustration, as for instance of the state of stupor, or for the enlightenment that animal experiments cannot give, as is the case with the problems of phantom limb and of anosognosia.

Within these limitations this book gives a competent and readable account of various selected aspects of the physiology of neurology and psychiatry. The neurologist has been well served of late with monographs and published symposia on various aspects of neurophysiology, and will be well advised to refer to these rather than to the corresponding sections of this book, with the exception of the chapters on the physiology of the motor cortex, which are excellent. On the other hand, the psychiatrist will find much information not well summarized elsewhere, in particular in the sections on physiological changes in emotion, on modifications in conditioned reflexes and autonomic reactions by shock treatments, and on the prognostic value with respect to response to E.C.T. of the blood-pressure changes after the injection of mecholyl. These sections give rise to hope of further advances in the understanding of the mechanisms involved in the physical treatments in psychiatry.

R. T. C. PRATT.

THERAPEUTIC ACCIDENTS

Maladies Medicamenteuses d'Ordre Therapeutique et Accidentel. By Claude Albahary. Preface de A. Tzanck. Avec le concours de D. Christol, B. Damoiseau, N. Pardon, R. Umdenstock, J. Vacher. (Pp. 752; 55 illustrations. Paper bound 4,400 fr. Leather bound 5,500 fr.) Paris: Masson et Cie. 1953.

Fortunately for the reviewer, Dr. Albahary says in the introduction to his book that he does not expect that anyone will read it through from cover to cover; it is meant rather for someone looking up information about a case or about a treatment with which he is not familiar. Professor Tzanck in his preface makes clear the distinction between intoxication and intolerance. Intoxication is the result of an overdose of a drug, actual or relative; it can be reproduced in animals and the symptoms are specific for the drug. Intolerance, which is much more common in practice, occurs with a normal or even with a very small dosage. It is the result of individual predisposition, the symptoms cannot be reproduced in animals, and they are not specific for the particular drug. The therapeutic revolution of the last half-century has been associated with the introduction of large numbers of drugs from which people develop symptoms of the second type. We are by now familiar with the fact that the symptoms and frequency of intolerance cannot be predicted from experiments in animals and often require a decade of clinical trials for their assessment. The book is arranged under the headings of mineral compounds, synthetic compounds, antibiotics, drugs from plants, hormones, and glandular substances, vitamins, haematinics, transfusions, sera, vaccines, inoculations, and shock-therapy. There is a good table of contents and a reasonable index, and it is easy to find one's way about the book. References are perhaps not so copious or conveniently arranged as in comparable American and English books. There are just over 50 diagrams and illustrations in black-and-white. The text is extremely up-to-date and has stood up well to sampling. For the moment, at any rate, the book appears to be unique in the range and depth of the information it provides on the accidents of therapeutics.

L. J. WITTS.

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RADIOACTIVE IODINE IN THE TREATMENT OF ANGINA

In a recent review of the treatment of angina pectoris Dr. Paul White referred to the use of radio-iodine in this condition.[1] Several years ago Lev and Hamburger[2] pointed out that thyrotoxic patients may suffer from angina, which usually disappears after thyroidectomy. This observation led Blumgart and his colleagues[3 4] to propose thyroidectomy as a possible method of treatment for angina and congestive cardiac failure in patients with normally functioning thyroids. They argued that when the basal metabolic rate was retarded the demands on the heart might be correspondingly reduced. Several series of patients were treated in this way, and in at least half the cases improvement is said to have occurred. The selection of patients was such as to make it most unlikely that the successes were due to spontaneous recovery. In a few cases the results were quite spectacular, some patients who had been bedridden for years with attacks of angina at rest being able to go back to a full day's work after the treatment.

Owing to the dangers of surgery in patients with advanced cardiac disease thyroidectomy could not be extended to all those for whom it might otherwise have been suitable.[5] But when thiourea and other antithyroid agents became available there were grounds for hoping that the same results could be achieved without the risks of an operation. Good results were soon reported by several groups of workers.[6-12] There are, however, certain rather serious drawbacks to this type of "medical thyroidectomy" by substances acting by inhibition of the synthesis of thyroid hormone.[13] The normal thyroid contains a large store of hormone and only a very small part of this store is secreted each day; consequently the B.M.R. does not fall until the antithyroid drug has been given continuously for several months. Moreover, the treatment must usually be continued for the remainder of the patient's life and entails the constant danger of drug sensitivity or damage to the blood-forming organs.

Radioactive iodine has been shown by Blumgart and his co-workers to be a more satisfactory method of inducing hypothyroidism.[14 15] The thyroid accumulates radio-iodine to a much greater extent than any other tissue, so that it can be completely destroyed by a dose of I^{131} which is without harmful radiation effects on the rest of the body. For example, a normal person's thyroid can be destroyed by a dose of I^{131} which will give to the blood a radiation dosage less than twice that to the abdomen during a diagnostic *x*-ray examination of the gastro-intestinal tract. This method of treatment has now been used extensively for several years.[16] The patients who respond most favourably are those with angina due to coronary atheroma, but some cases of congestive cardiac failure from other causes may also benefit. The clinical response occurs more rapidly than is the case with antithyroid drugs, and the side-effects are generally trivial and short-lasting. In a few patients given the largest doses there may be a temporary exacerbation of symptoms owing to the rapid liberation of thyroid hormone into the blood stream, but this can probably be avoided by giving the radio-iodine in divided doses. In Blumgart's series of cases the best results were obtained by total destruction of the thyroid, followed by a daily dose of thyroid hormone sufficient to keep the B.M.R. at about 20% below the normal level. Patients treated in this way are said to have obtained great relief from their symptoms without suffering from the discomforts of myxoedema. But other workers have found it more difficult to strike this balance.

The mechanism by which thyroidectomy relieves some patients of angina is not altogether clear. It has been shown that the resting cardiac output is reduced in myxoedema[17]: this seems to be due not only to the diminished oxygen requirement of the tissues at rest, but also to more efficient utilization of oxygen,[18] so that for a given oxygen demand by the body a smaller blood flow is required in the hypothyroid state. However, these factors can hardly explain the greatly increased exercise tolerance observed in some of Blumgart's patients, because during muscular work the basal oxygen consumption is only a small proportion of the total. It is difficult to see why a man who gets attacks of angina at rest when using 300 c.c. of oxygen per

1 *J. Amer. med. Ass.*, 1953, **153**, 75.
2 *Amer. Heart J.*, 1932, **8**, 109.
3 *Arch. intern. Med.*, 1933, **51**, 866.
4 Ibid., 1933, **52**, 165.
5 Cutler, E. C., and Hoerr, S. O., *Ann. Surg.*, 1941, **113**, 245.
6 Raab, W., *J. Amer. med. Ass.*, 1945, **128**, 249.
7 Reveno, W. S., *Amer. J. Med.*, 1946, **1**, 607.
8 Sharpey-Schafer, E. P., *British Medical Journal*, 1946, **2**, 888.
9 Ben-Asher, S., *Amer. Heart J.*, 1947, **33**, 490.
10 Frisk, A. R., and Lindgren, I., *Acta med. scand.*, 1948, **132**, 69.
11 Hollander, G., and Mandelbaum, H., *Ann. intern. Med.*, 1948, **28**, 1150.
12 Schoenewald, G., *British Medical Journal*, 1948, **1**, 251.
13 Di Palma, J. P., and Magovern, J. J., *Amer. Heart J.*, 1946, **32**, 494.
14 *Proc. Soc. exp. Biol. (N.Y.)*, 1948, **67**, 190.
15 *Circulation*, 1950, **1**, 1105.
16 Wolferth, C. C., Chamberlain, R. H., and Mead, J. J., *Penn. med. J.*, 1951, **54**, 352.
17 Blumgart, H. L., and Berlin, D. D., *Amer. J. Physiol.*, 1934, **109**, 1.
18 Altschule, M. D., and Volk, M. C., *J. clin. Invest.*, 1935, **14**, 385.
19 Bing, R. J., *et al.*, *Amer. Heart J.*, 1949, **38**, 1.

minute, and is free from attacks at rest after his B.M.R. has been reduced by thyroidectomy, should not get his pain again when he increases his oxygen consumption to, say, 600 c.c. per minute by walking along the flat. Evidently the relation between thyroid function and anginal pain is far from being the simple one originally postulated by Blumgart. Emotional stimuli are known to precipitate attacks of angina at rest and may also increase the ease with which angina is brought on by muscular effort. The increased emotional stability which usually follows thyroidectomy might be expected to reduce the number and severity of attacks at rest or during exercise.[15] It has also been claimed that thyroidectomy lessens the sensitivity of the cardiovascular system to adrenergic stimuli,[6] but the evidence for this is not conclusive in humans. A further possibility is that the heart uses its oxygen supply more efficiently and so is able to do more work without becoming anoxic. Evidence on this point could be obtained with the methods now available for the direct study of cardiac metabolism by catheterizing the coronary sinus.[19]

There is now little doubt that "radio-iodine thyroidectomy," because of its permanence, simplicity, certainty, and freedom from serious side-effects, is the best available method for reducing the activity of the thyroid in patients with intractable cardiac disease. But more experience is needed before it can be said whether the induction of a state bordering on myxoedema should be more widely extended or should be reserved for a few patients who fail to respond to all other forms of treatment. Carefully controlled studies are needed to show whether thyroidectomy prolongs the comfortable life of these patients or whether it tends to shorten life by accelerating the development of coronary atheroma.

QUESTIONARIES IN CLINICAL TRIALS

Some clinical trials have been carried out in such a way that, in spite of the difficulties of measuring clinical responses, they can stand as models of scientific procedure. One example is the investigation by the Medical Research Council[1] into the use of streptomycin in pulmonary tuberculosis, though not all successful trials are on such a large scale, and not all are recent. The help which a study of these reports can give may perhaps be supplemented by considering separately some of the errors and difficulties that may arise in clinical trials, especially those in which the assessment of symptoms rather than of signs is an important feature.

Glaser and Whittow[2] have just reported the results of an interesting study carried out mainly on two groups of students at Singapore. On eleven occasions at the end of a lecture period the students filled in a brief questionary in which they gave information about the presence of eight symptoms commonly found after taking hyoscine hydrobromide, and about two symptoms, hunger and backache, commonly found on routine inquiry. This simple procedure, carried out for the first three lectures, led to the surprising result that the frequency of the three major symptoms, sleepiness, dryness of the mouth, and headache, was initially very high but declined during the period of observation. The interpretation of the authors was that the symptoms were suggested by the questionaries, so that the first response was unduly high, but subsequently habituation to the questionaries took place and in consequence the frequency of symptoms showed a significant decline. It seems reasonable to suppose that the need for a subject to observe his own reactions should make him notice, or imagine, symptoms of which he would otherwise be unaware. This point is of interest because it is becoming increasingly popular in the U.S.A. for a patient to provide his medical history by filling in a questionary such as the Cornell Medical Index. It has been claimed by the authors who introduced this technique that they were able to detect a patient's need for general medical care much better than a physician who took the usual oral history.[3] Glaser and Whittow, in the light of their findings, issue the warning that the questionaries themselves may produce symptoms. Even so, this claim might well be as true of a patient's oral replies to questions as it is of his written replies to a questionary. At any rate the experiences of Cochrane, Chapman, and Oldham[4] show clearly enough that different doctors attempting to elicit the same piece of information may vary greatly in their estimate of whether a symptom is present or not. These doctors were questioning miners, who had been allotted to them in such a way that there was no reason to suspect anything other than random variation in the frequency with which various symptoms would be found. An attempt was made to conduct similar types of interviews. Nevertheless, one physician found, for example, a history of cough in 40% of 300 subjects and another in as few as 23% of 261 subjects. The one encouraging feature of this investigation was that there were apparently some questions such as, "Have you ever had pleurisy?" which were so unambiguous that the various observers obtained substantially the same answer.

[1] *British Medical Journal*, 1948, 2, 769.
[2] *Clin. Sci.*, 1954, 13, 199.
[3] See *British Medical Journal*, 1952, 2, 1246.
[4] *Lancet*, 1951, 1, 1007.
[5] *Biometrics Bulletin*, 1946, 2, 87.
[6] *Brit. J. prev. soc. Med.*, 1953, 7, 163.
[7] *British Medical Journal*, 1953, 2, 1284.

Glaser and Whittow were unable to detect any further significant variation in the level of symptoms after the third test, except on occasions when certain special factors were introduced. Thus, on the fourth and fifth day the questionaries were filled in both before and after the lecture, and fewer symptoms were recorded before the lecture than after. Most readers will not be surprised at this result, but it does serve to emphasize the variability of the subjects under different conditions. Throughout the study there were consistent differences between the frequency of symptoms in the two groups of students, group A showing more symptoms than B. However, group B was questioned at 9 a.m. and group A either at 11 a.m. or at noon. In the absence of a cross-over type of experimental design we are left to assume that these differences in the two classes were due to the different times at which the students reported their findings, and there is some confirmatory evidence for this.

In the main tests at Singapore a tablet containing 1 mg. of hyoscine hydrobromide was given before the ninth lecture, and produced characteristic symptoms in most of the students. Dummy tablets given before the sixth, seventh, eighth, tenth, and eleventh lectures produced no significant changes in the frequency of symptoms. In assessing the effect of placebos the reader must keep in mind the fact that the subjects were healthy, and the investigators were therefore concerned with the production, not the relief, of symptoms. The important part that a placebo may play in experiments of the latter type has been demonstrated by the careful work of Jellinek.[5] He wished to find out whether the omission of certain ingredients from an analgesic tablet affected the ability of the tablet to relieve headache. Drug A contained all the usual ingredients; drug B had been deprived of ingredient b and drug C of ingredient c, and drug D was the placebo. The subjects were 200 patients who suffered from repeated headaches. They were divided into four groups; the members of each group used each type of drug for a period of two weeks, but the groups differed in the order in which they tried the various drugs. Thus one group received the placebo for the first two weeks, one for the second, and so on; and this admirable design separated the effects of the drugs from the effects of the order of administration. A first analysis of the results showed that the placebo was successful in 52% of cases, drug A in 84%, B in 80%, and C in 80%. From a less carefully designed experiment it might have been concluded that the effects of A, B, and C were not different, though each was superior to the placebo. However, in this case it was possible to compare A, B, and C separately on those patients who responded to the placebo and on those who did not. The latter were clearly the better discriminators of analgesic effects, and in the results obtained from them it was found that there were clear differences, the order of efficiency being: A, 88% success; B, 77% success; and C, 67% success.

In contrast to this use of modern statistical methods is a paper by Hogben and Sim[6] in which such methods are deliberately avoided. They described a technique for conducting a complete clinical trial on a single individual, in this way exploring those differences between individuals which are especially important to the clinician. The main feature of the method is to master the problem so thoroughly that the investigator can invariably obtain, in any individual, a particular response from a particular treatment. The anti-statistical approach here advocated is all the more effective because of the authors' great knowledge of conventional statistical methods. The difficulty is that the solution proposed would work best when least needed—that is, when knowledge is fairly complete. It would offer little guidance to an investigator struggling, as most investigators are, with interesting but obstinately variable phenomena. An essential requirement in these cases is that the methods of sampling used should be as sensitive and as representative as possible. In a recent paper White[7] has outlined some of the methods of achieving this and some of the common causes of failure.

PYRIDOXINE DEFICIENCY AND CONVULSIONS

Epileptiform convulsions in infants, occurring sporadically in all parts of the U.S.A. during 1951–3, have been reported.[1 2] There were no distinctive clinical or laboratory signs of organic disease of the central nervous system, and the only factor common to all cases was that the babies had been fed since birth on an artificial fluid milk mixture which had been sterilized in the process of manufacture by "rigorous autoclaving"; this had reduced its pyridoxine (vitamin B_6) content to less than 60 μg. per litre. In all cases the convulsions were cured at once by treatment with pyridoxine or by changing the milk mixture. More recently another case has been reported[3] in a newborn infant of a woman who, during her pregnancy, had had hyperemesis treated with three to four intramuscular injections weekly of 50 mg. pyridoxine hydrochloride. After a prolonged and stormy clinical course in which many convulsions occurred while the responsible factor was being sought, the child was eventually maintained free of convulsions on 2 mg. pyridoxine hydrochloride daily by mouth. In spite of this, at 20 months of age she was mentally retarded. This case falls into a somewhat different category from the others, since the child has been kept

free of convulsions only by giving supplements of pyridoxine in addition to the normal diet, whereas the others have been controlled by the pyridoxine present in milk mixtures which were not reinforced with the vitamin.

Vitamin B_6 was first recognized as a separate entity in 1934[4] and identified with the Factor Y which Chick and Copping described in 1930.[5] Its indispensability in the nutrition of lower animals was established in the years that followed,[6] but it was not until 1950 that unequivocal evidence was reported of the effects of its deficiency in human adults[7] and infants.[8] Snyderman *et al.*[8] treated two mentally defective infants aged 2 and 8 months with a diet deficient in pyridoxine for 76 and 130 days respectively. Both children failed to gain weight, but apart from this the syndrome which resulted was different, the younger infant developing convulsions on the seventy-sixth day, the older a severe hypochromic microcytic anaemia which was refractory to treatment with iron. Both quickly responded to treatment with pyridoxine. It seems that the age at which deficiency is established has some bearing on whether the clinical picture should be a neurological one or not, since the age group affected by the artificial milk mixture[1 2] was 5 weeks to 4 months, with a mean of 2½ months. It is during this period that myelination of many of the association tracts of the fore- and mid-brain is being completed, and it may be significant that degenerative changes take place in the myelin sheaths of peripheral nerves and the spinal cord of pyridoxine-deficient dogs,[9] and epileptiform convulsions occur in pyridoxine-deficient rats.[10] Pyridoxine is involved in fat and protein metabolism, and in its absence tryptophan is not converted to nicotinic acid. Snyderman *et al.*[11] noted inability to excrete N′-methyl nicotinamide in the urine after a dose of tryptophan as early as the twentieth day of the deficiency period in their two cases, and they suggested that this might form the basis of a clinical laboratory test for pyridoxine deficiency. However, Hunt *et al.*[3] did not find an abnormal response to tryptophan loading in their patient or in her mother.

Pyridoxine is heat-stable but vulnerable to ultra-violet light,[6] and presumably to autoclaving. In America whole human milk contains 11 μg., and cow's milk 48 μg., per 100 ml.[12] No British figures are available. The minimum requirement of pyridoxine in infancy has not been determined, but Snyderman *et al.*[11] maintained their cases on 0.67 mg. of pyridoxine daily before starting the experimental deficiency period. On this intake both infants were able to metabolize tryptophan normally, though unable to do so when the intake was cut to 0.15 mg. daily. No cases similar to the American ones have yet been reported in Britain. There is no doubt, however, that deficiency of pyridoxine in the diet, and even inability to use pyridoxine in the amounts supplied in a normal diet, can cause convulsions in infancy.

[1] Molony, C. J., and Parmelee, A. H., *J. Amer. med. Ass.*, 1954, **154**, 405.
[2] Coursin, D. B., ibid., 1954, **154**, 406.
[3] Hunt, A. D. jun., *et al.*, *Pediatrics*, 1954, **13**, 140.
[4] György, P., *Nature (Lond.)*, 1934, **133**, 498.
[5] Chick, H., and Copping, A. M., *Biochem. J.*, 1930, **24**, 1764.
[6] Bicknell, F., and Prescott, F., *The Vitamins in Medicine*, 1948, Heinemann, London.
[7] Mueller, J. F., and Vilter, R. W., *J. clin. Invest.*, 1950, **29**, 193.
[8] Snyderman, S. E., *et al.*, *Fed. Proc.*, 1950, **9**, 371.
[9] Street, H. R., *et al.*, *J. Nutr.*, 1941, **21**, 275.
[10] Chick, H., *et al.*, *Biochem. J.*, 1940, **34**, 595.
[11] Snyderman, S. E., *et al.*, *J. clin. Nutrition*, 1953, **1**, 200.
[12] Macy, I. G., *et al.*, *The Composition of Milks*, National Research Council Bulletin. 1950.

NURSING-HOMES

Figures given in the annual reports of the county medical officer for London show that the second world war and the National Health Service Act caused great changes among the nursing-homes of London. At the end of 1937 170 nursing-homes were registered in the L.C.C. areas. Evacuation, damage by enemy action, shortage of staff, and other difficulties reduced the number of active homes to 108 in 1945, and the homes which survived the war had great difficulty in maintaining their standards. The replacement of equipment (particularly linen), rationing, and the shortage of skilled staff had to be surmounted during the difficult war years, and most nursing-homes were then faced with heavy expenditure on repairs and redecoration in the immediate post-war years. This alone was often enough to discourage the owners of the smaller type of home from continuing. In addition the pre-war nurse's salary of £60 to £90 a year, all found, had by 1953 become £350 plus a living-out allowance. It was not surprising, therefore, that between 1947 and 1953 there was a further drop in the number of nursing-homes from 63 to 48. This drop of 24% in the number of homes in London since the National Health Service began, when measured in number of beds available, shows a decrease of 9.4%. During this same period 19 new homes were registered, but 34 were closed.

Rising costs have alarmed the users as well as the owners of nursing-homes. Accommodation which before the war cost 5 to 8 guineas a week, with a maximum of about 12 guineas, to-day costs from 11 to 25 guineas a week—not a disproportionate increase when compared with rises in costs. Fees of this magnitude which may be borne for a short period by the acutely ill are an impossible burden on patients of advanced age with small fixed incomes: in many cases the expense is met for a time out of capital or by relatives or friends. This is one of the main reasons why the number of empty beds has increased in nursing-homes. There are still some small homes with from 6 to 10 beds charging about 6 guineas upwards, but at such a figure and with present-day prices no more than the bare minimum of nursing staff can be provided, and the food could hardly be expected to be of the highest quality. Homes of this type appear to be on the border of solvency, and it may well be that few can survive. On the other side of the picture are a few homes charging fees as high as 30 to 35 guineas a week. These homes are in constant use by physicians and surgeons of high standing, and the professional skill and care are matched by a service similar to that of a luxury hotel.

The introduction of the National Health Service came at a time when the falling birth rate was reducing the admissions to maternity beds in nursing-homes, and coincided with a period when maternity wards were being expanded in the hospitals. The number of confinements taking place in nursing-homes in London was 3,167 in 1947: in 1952 this had fallen to 1,091. This large drop

cannot be wholly accounted for by the fall in the birth rate from the exceptionally high figure of 20.9 per 1,000 of the population in 1947 to 15.3 in 1952. Recent annual reports of the medical officers of health of other large cities show the same trend. Most homes found that in the post-war years less use was being made of their operating theatres and more beds were being used for medical cases, particularly for the treatment of the chronic sick or senile patients: in 1948 30% of the beds in nursing-homes were occupied by patients in those two categories. By 1953 this figure had risen to 44%, and in the same period the proportion of beds occupied by maternity cases fell from 10% to 5%, and of all beds occupied from 75% to 71%.

State-registered nurses are not as a rule keen to work in private nursing-homes, and the comparatively uneventful nursing of the chronic sick does not greatly attract them. It is the State-enrolled assistant nurses, or the older women, trained but without State registration, who nurse such cases. The organization of comprehensive home-nursing and home-help services under the local health authority, and the establishment of old people's homes under welfare provisions, while in no sense a replacement of the private nursing-home, have added to the facilities available and undoubtedly had some effect in reducing the numbers of those who might have gone into a private home. The borderline between what constitutes nursing of the sick and caring for the old and enfeebled is very ill-defined. Establishments which provide care for the aged by ordinary unskilled staff fill a real need, and there are good reasons why some of the smaller nursing-homes should turn their attention to this type of elderly person who so often fails to find the accommodation for which he or she is seeking.

EPHEDRINE AND URINE FLOW

Recently letters to the *Journal* have referred to difficulty in micturition caused in elderly male patients who are sufferers from asthma, when using ephedrine. It is true that little attention has been given to this troublesome effect of ephedrine, but it is known and described. The earliest discussion seems to be that of Balyeat and Rinkel,[1] who observed that ephedrine caused urinary retention in asthmatics in 1925, those complaining being women as well as men. In men over 60 they noted a lack of desire to pass urine. They found no satisfactory explanation. They stated in their article that according to Pottenger[2] and to Kuntz[3] the parasympathetic supply stimulates, while the sympathetic supply relaxes, the bladder, but that the reverse is true of the sphincter, which is therefore contracted by ephedrine since it potentiates sympathetic effects. Goodman and Gilman[4] also stated that under the influence of ephedrine the tone of the trigone and of the sphincter is increased as it is by drugs like morphine. They pointed out that urinary discomfort is prone to occur in those approaching the age of prostatic hypertrophy. Dr. Hugh Cartwright[5] referred in his letter to similar symptoms following the use of amphetamine and related substances. This is to be expected, since their action in the body is similar to that of ephedrine, though usually they are given for different reasons. The fact that the spasm of the sphincter ceases on withdrawal of the drug indicates that there is no question of obstruction, and emphasizes that there is an important element of transient spasm as distinct from permanent obstruction in the difficulties of micturition met in advancing years. Some have observed that a slight amount of physical exertion relaxes the spasm. There is need for research in this field.

[1] *J. Amer. med. Ass.*, 1932, **98**, 1545.
[2] *Symptoms of Visceral Disease*, 1925. St. Louis.
[3] *The Autonomic Nervous System*, 1929. Philadelphia.
[4] *The Pharmacological Basis of Therapeutics*, 1941. New York.
[5] *British Medical Journal*, 1954, **1**, 1036.

SERVICE IN THE COLONIES

Health in the Colonies continued to improve in 1953, and the year was a more fortunate one than usual in that no epidemics of communicable disease appeared.[1] In most respects the Colonial Office can report favourably on the health of the very diverse peoples under the care of its medical officers. But for these "there is still an urgent need for recruitment in the United Kingdom." The main difficulty is to attract candidates for Nigeria and the Gold Coast; demands in other parts of the world have been met fairly well, even other parts of Africa. Uncertainty about future prospects in West Africa is a deterrent, though, as Mr. Ian Fraser reported[2] in this *Journal* last year, the need for British doctors is great, particularly for specialists. The B.M.A. has had consultations with the Colonial Office on this problem, and meanwhile a reassuring statement of intentions has come from Nigeria. Leaders of Nigerian Delegations assembled at Lagos for the Constitutional Conference have affirmed that "the interests of overseas officers who continue in the future to serve in the public services of Nigeria shall be fully safeguarded." Pensions liabilities will be honoured, and appointments are to be kept free of political control. The whole statement should be obtained from the Colonial Office and studied by candidates who are considering applying for the Nigerian posts advertised in the *Journal* this week at advertisement page 45.

The remarkable variety of practice awaiting those medical officers who venture abroad is evident from the Colonial Office's report. While the year was, epidemiologically, a quiet one, it yet brought such tremendous challenges to medical relief as a tidal wave in Fiji, an earthquake in Cyprus, a disastrous fire in Hong Kong, and the worst drought for twenty years in the island of Antigua. Nor are fire and flood the only rivals to the tropical diseases as a cause of misery in hot climates, for some of the diseases characteristic of temperate climates are scourges there also. Outstanding among these is tuberculosis, while pneumonia, despite widespread use of antibiotics, "is still a killing disease." Some of the puzzles posed during the year included an unexpected epidemic of kala azar in Kenya, rabies caused by infected bats in British Guiana, and sixteen cases of undulant fever in Gibraltar, traced to imported goats' milk. But, in spite of environmental difficulties and staff shortage, the Colonial medical services' record of work in the year is one of which they may well feel proud.

[1] *The Colonial Territories, 1953-4*, H.M.S.O. 6s.
[2] *British Medical Journal*, 1953, **2**, 987.

CLINICAL PATHOLOGY IN GENERAL PRACTICE

LABORATORY INVESTIGATION IN THE HYPERCHROMIC ANAEMIAS

BY

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It cannot be stressed often enough that an anaemic patient should be investigated at least by a blood count and a bone-marrow biopsy before anti-anaemic treatment is started. Unfortunately this is often not done. As a result, the physician is faced later with the almost insuperable problem of trying to decide, for example, whether a patient has or has had pernicious anaemia, when he has already been given active treatment with liver, folic acid, or vitamin B_{12} without a proper laboratory diagnosis having been made. Since the patient with pernicious anaemia must continue treatment for life, it is of vital importance to be certain of the correct diagnosis in the beginning.

Varieties of Macrocytic Anaemia

Now hyperchromic macrocytic anaemia, although most often seen as pernicious anaemia, may occur in a number of other less common conditions not necessarily related aetiologically to pernicious anaemia. These conditions sometimes cause difficulty in diagnosis, but it is important to make a correct diagnosis, as they often require different types of treatment. Thus, the achylic, or "agastric," macrocytic group comprises primarily the classical pernicious anaemia, but also an identical but much rarer hyperchromic macrocytic anaemia which sometimes follows the removal of the gastric secreting cells by total gastrectomy or the destruction (as by corrosive poisons) of the haemopoietin- and acid-secreting cells of the stomach. If untreated, this anaemia is fatal.

The non-Addisonian group of hyperchromic macrocytic anaemias includes a number of conditions of varying aetiology and treatment. These anaemias are not necessarily progressive and fatal, nor are they usually associated with atrophy of the gastric mucosa or with achylia. They are seen in tropical sprue, idiopathic steatorrhoea (non-tropical sprue), and occasionally in coeliac disease in children; pregnancy; malnutrition; certain diseases of the liver or endocrine disorders; certain neoplastic changes affecting the bone marrow (myelosclerosis); and very occasionally in childhood. There is also a group of idiopathic refractory megaloblastic anaemias.

Patients with a macrocytic anaemia show a variable degree of anaemia, and, according to its severity, there may be a brownish, but more usually a light or pale (lemon) yellowish, colour of the skin and mucous membranes. Those with an achylic anaemia—for example, pernicious anaemia—will frequently have a sore smooth tongue with an atrophic mucous membrane, flatulent dyspepsia, often recurrent mucous diarrhoea, some tingling and numbness in the fingers and toes, and histamine-resistant achylia gastrica. These symptoms are usually quite mild and may be intermittent in the early stages but become persistent and much more severe as the anaemia becomes worse. On the other hand, those with one of the non-Addisonian macrocytic anaemias may show slightly different and often quite diagnostic features. Thus in the anaemias secondary to disturbances of the bowel we find, for example in tropical sprue, that there may be severe malnutrition, loss of weight, glossitis, and typical light-coloured, frequent fatty stools, with changes in fat balance, which may be relieved wholly or in part on return to temperate climates and after a reduced fat intake; usually the gastric secretion contains both haemopoietin and a more or less normal amount of hydrochloric acid, although sometimes there is achlorhydria gastrica, but it is not necessarily histamine-resistant. In the non-tropical type of sprue, or idiopathic steatorrhoea, similar features are seen usually in adults in temperate climates, but the fatty diarrhoea may be quite mild and vary very much with the dietary fat intake, and it may be necessary to make a fat-balance test to detect this abnormality; the gastric acidity is usually normal, but there may be some decalcification of bones. Coeliac disease, the counterpart of idiopathic steatorrhoea in children, is much more rarely associated with a hyperchromic anaemia; usually there is a hypochromic microcytic or normocytic type of anaemia.

All these sprue-like conditions if associated with a macrocytic anaemia respond to folic acid but not to vitamin B_{12}.

The tropical hyperchromic macrocytic anaemias represent a heterogeneous group probably having several aetiological factors, according to the geographical situation, but in general they are nutritional anaemias probably caused by severe nutritional deficiencies of extrinsic factor and other vitamins and food factors. They often occur in young pregnant women with normal gastric acidity and a normal fat balance, and only rarely are they associated with glossitis and gastro-intestinal symptoms.

There is a definite but relatively uncommon macrocytic or megaloblastic anaemia of pregnancy in which the symptoms and the blood and bone-marrow pictures resemble very closely pernicious anaemia, but the gastric secretion is normal and a therapeutic test shows a rapid remission with folic acid but not following vitamin B_{12}. The patient remains cured and does not require treatment subsequently.

A very uncommon macrocytic (often megaloblastic) anaemia is encountered in children, and has been described as being pernicious anaemia, but it is not a genuine Addison's anaemia; achylia is not necessarily found and the anaemia appears to respond only to folic acid and, poorly, to vitamin B_{12}. Hyperchromic macrocytic anaemia with a megaloblastic marrow and usually normal gastric secretion may be seen in cirrhosis of the liver, and occasionally in diseases of the pituitary and thyroid (hyperthyroidism) glands, severe malnutrition, and neoplastic conditions mainly affecting the marrow as in myelosclerosis.

A typical hyperchromic megaloblastic anaemia without achylia or the Addisonian symptoms of glossitis, flatulent dyspepsia, diarrhoea, paraesthesiae, or neurological symptoms is seen in achrestic anaemia. This is due apparently to inability on the part of the liver to release its anti-pernicious-anaemia "liver principle" when required in the bone marrow.

Occasionally cases of idiopathic refractory megaloblastic anaemia are seen that do not respond properly to any treatment and whose aetiology is unknown. They may have normal or diminished gastric secretion, and often nutritional factors are involved.

Blood Examination

A full examination of the blood will show the following features in pernicious anaemia: a macrocytic hyperchromic anaemia, usually with a much greater reduction in the red-cell count than in the haemoglobin value so that the colour index (although a very inaccurate measure) may be very high (1.3 to 1.6). These changes are paralleled by an

increase in the mean cell volume (M.C.V.) to 95–160 μ^3 (normal 82–95 μ^3), and mean corpuscular haemoglobin (M.C.H.) 33–56 $\gamma\gamma$ (normal 27–31 $\gamma\gamma$); the mean corpuscular haemoglobin concentration (M.C.H.C.) is 32–36% (in iron-deficiency hypochromic anaemia this value is often considerably less than 30%). In the stained blood smear the red cells show marked variety in size (anisocytosis) and bizarre, oval, and pear shapes (poikilocytosis). The cells seem well filled with haemoglobin (mainly owing to their being bigger and thicker in strong contrast with the thin, pale, ring-like cells of hypochromic microcytic anaemia.

In a severe anaemia there will be polychromatophilia, basophilia with fine or coarse basophil stippling, and often some nucleated red cells (normoblasts) may be seen; the last are often noted in haemolytic anaemia. The presence of megaloblasts in the peripheral blood is not common, but is thought to be confirmatory evidence of pernicious anaemia. Sometimes unusual cells such as Howell–Jolly bodies may be seen, but they are not of any diagnostic significance in pernicious anaemia.

The platelets may be diminished in numbers, especially when there is severe anaemia, and may be lower than 50,000 per c.mm.; they increase rapidly with anti-pernicious-anaemia treatment. Clinically, purpuric manifestations, bleeding from the gums, epistaxis, and retinal haemorrhages occur only when severe anaemia is associated with a platelet reduction below about 40,000 per c.mm.

The reticulocytes are usually less than 2% except under two conditions, namely: (*a*) during spontaneous remissions which are accompanied by a reticulocytosis, and (*b*) during the first 14 days after adequate anti-anaemic treatment, when a peak of 15–60% occurs at about the sixth to the tenth day, the level being inversely proportional to the initial red-cell count. A persisting irregular reticulocyte count of 5–30% or more suggests a haemolytic anaemia.

Most of the secondary group of macrocytic anaemias described above (sprue, steatorrhoea, pregnancy, etc.) show an almost identical blood picture to that of pernicious anaemia, but, while there are no characteristic differences, tests of the gastric secretions and a therapeutic test allow further differentiation.

Generally the leucocyte count is somewhat reduced (3,000 to 5,000 per c.mm.). Usually there is a relative but sometimes an absolute lymphocytosis (1,000 to 4,000 per c.mm.) due mainly to a reduction of the granular cells. Quite often some large multisegmented (6–10 lobes) polymorphonuclear neutrophilic leucocytes (macropolycytes) are found in the blood smear, and these may appear even before there are gross changes in the red cells; much less frequently a few immature cells, usually myelocytes or metamyelocytes, may be seen.

In passing, it should be mentioned that it used to be common to see a temporary eosinophilia after treatment with liver or liver extracts, but this is a less frequent observation with modern forms of therapy.

Occasionally a patient with a hyperchromic macrocytic anaemia may be found to have a leucocytosis of, say, 10,000–14,000 per c.mm., with 8,000–12,000 being polymorphonuclear leucocytes. This should always suggest either a complicating infection or some other lesion such as a neoplasm of the stomach or lungs for which careful search must be made.

Marrow Biopsy

This has now become an essential procedure in the investigation of any disease of the blood, particularly in early and difficult cases. By its use some of the anaemias previously thought to be refractory have been elucidated and in other blood diseases diagnosis has been established with certainty and at earlier stages.

The technique for obtaining suitable material is simple. The best site in adults is generally the centre of the manubrium sterni, but in children an iliac crest or sometimes a vertebral spine may be easier. The skin is cleaned and infiltrated with a local analgesic, down to and including the periosteum. The sample is obtained with a Salah needle, gentle suction being applied with a dry 1-ml. "tuberculin" syringe. In children the procedure is much simplified by the use of light anaesthesia, such as with ethyl chloride for two or three minutes, while the iliac crest is punctured at right angles to and just below the upper surface.

Failure to obtain a sample of marrow because of thickened hard bones, or absence of or failure to find a marrow cavity, suggests myelosclerosis.

The specimen obtained, which consists of marrow fragments in a variable amount of blood, is examined after making smears. Some prefer to examine the small fragments of marrow on a slide after they have first been expressed from the syringe on to a watch-glass.

The slide is stained by the Jenner–Giemsa or a similar technique, and examined under the 1/12 oil-immersion lens. An estimate is made of the degree of cellularity, the different types and relative numbers of erythroblasts, granulocytes, lymphocytes, plasma and reticulum cells, and megakaryocytes are ascertained, and any predominating type is noted. In pernicious anaemia and the other hyperchromic (macrocytic) megaloblastic anaemias the marrow picture will be absolutely characteristic. The marrow will be very active (hyperplastic) and contain a high proportion of megaloblasts of all types, sometimes proerythroblasts, often showing various nuclear patterns and active mitosis, but relatively few normoblasts; in milder cases there may be only a few megaloblasts.

In sprue, steatorrhoea, and the tropical macrocytic anaemias quite a number of normoblasts are commonly found, with a transitional rather than a fully megaloblastic type of myelogram; this may be even more marked in coeliac disease in children, who usually show a fully normoblastic marrow.

There is quite often evidence of an unusual and increased leucopoiesis, mainly demonstrated by an increase in the numbers of granular leucocytes and large metamyelocytes; giant hypersegmented polymorphonuclear cells may be noted and probably give rise to the macropolycytes seen in the blood film. On the other hand, there may be a definite reduction in the number of megakaryocytes which parallels the thrombocytopenia in the peripheral blood.

Since this whole marrow picture is typical and pathognomonic for pernicious anaemia and megaloblastic hyperchromic anaemia, it will be realized how important it is to make this examination *before* giving any treatment. The characteristic picture is completely converted to a normoblastic hyperplasia, with disappearance of the megaloblasts, within a few days of giving liver extract, vitamin B_{12}, or folic acid; it thus becomes impossible to make a correct diagnosis afterwards.

In the haemolytic anaemias the marrow shows a very active picture, with plenty of normoblasts of all types (which may be prematurely haemoglobinated), proerythroblasts, and sometimes haemocytoblasts; there are no megaloblasts. Owing to the intense erythroblastic reaction, which may occupy 75% of the cell space, there may be some reduction in megakaryocytes and early granular leucocytes.

Gastric Secretion

Some of the most striking symptoms in the hyperchromic anaemias are referable to the gastro-intestinal tract. Thus the glossitis, flatulent dyspepsia, gastritis, and recurrent mucous diarrhoea are all associated with atrophy of the gastric secretory glands. Every patient with pernicious anaemia (as well as with subacute combined degeneration of the cord) has a complete and irreversible histamine refractory achylia gastrica (commonly a familiar hereditary feature), and normal gastric secretory function is never regained, even after treatment and relief of the gastro-intestinal symptoms.

Whatever may be the other pathological and haematological findings, if free hydrochloric acid is found in the stomach secretion, then the diagnosis cannot be one of pernicious anaemia. On the other hand, the secondary non-Addisonian types of hyperchromic macrocytic anaemias

usually have a normal or slightly reduced gastric acidity, although in patients with tropical sprue, and occasionally in non-tropical steatorrhoea, achlorhydria (not always histamine-refractory) may be noted quite often.

Fat Absorption

While in patients with tropical sprue the typical bulky fatty stools are obvious, it may only be necessary to determine the fat distribution in a simple sample to confirm the gross failure of absorption. In mild cases of sprue and in most cases of non-tropical steatorrhoea and coeliac disease, a single fat analysis may be inconclusive. It is then necessary to carry out a fat-balance test in which the patient is given a fixed diet containing 70 g. of fat, and the fat or fatty acid contents of the faeces are determined daily over a twelve-day test period. The first three daily totals of faeces are bulked together, and the average figure determined for fatty acids. If there is 95% absorption there is no abnormality of fat-splitting and absorption, but less than 70% indicates definite abnormality. If the fatty-acid determination indicates 80–93% fat absorption, further daily estimations must be made until the daily output of fatty acids or fats remains constant. If the value for fatty acids in the daily output is equivalent to less than 90% of the total daily fat intake, the steatorrhoea is confirmed.

Therapeutic Test

When all the preliminary and confirmatory examinations have been made the final test is the therapeutic one.

In pernicious anaemia and the agastric anaemias requiring or expected to respond to hog's stomach, liver extracts, or vitamin B_{12} (cyanocobalamin), the appropriate dose is given, 1 to 2 ml. of liver extract intramuscularly daily for three days or 100 μg. vitamin B_{12} subcutaneously daily for two to three days. A reticulocyte count is made daily and determinations of the haemoglobin and the red blood cell count twice weekly. No other treatment should be given during this test. If the diagnosis and treatment are correct then the reticulocyte count will rise rapidly in the course of the following four to eight days to a maximum peak of 15 to 60%, depending on the dosage and potency of the specific treatment and the initial depression of the red-cell count. At an initial level of 1,000,000 red cells per c.mm. a peak of 30 to 40% reticulocytes would be expected, while at 2,000,000 per c.mm. a peak of only 15 to 25% reticulocytes would appear. At the same time the number of red blood cells and the haemoglobin value would rise steadily and progressively to normal levels with further treatment. These results would thus confirm the diagnosis of a macrocytic hyperchromic anaemia due to the expected deficiency.

The non-Addisonian macrocytic hyperchromic anaemias do not respond to liver extracts and vitamin B_{12}. But, after a negative response in the above test, the administration of folic acid, 50 to 100 mg. parenterally for two or three doses, or of 10 to 20 mg. orally daily, will produce a similar haematological response. Failure to respond suggests an error in diagnosis, inadequate or inactive treatment, or some other complicating and concomitant disease or factor.

Conclusion

As a rule the differential diagnosis of these hyperchromic megaloblastic anaemias can be made quite readily by a full blood count, marrow biopsy, and an evaluation of the gastric secretory function.

A diagnosis of pernicious anaemia is certain if there is a macrocytic hyperchromic anaemia, with an active (hyperplastic) megaloblastic bone marrow, and an achylia gastrica, and there is a full haematological and clinical remission after adequate treatment with an active liver extract, vitamin B_{12} parenterally, or hog's stomach orally. (*Note:* Folic acid must *not* be given to patients with pernicious anaemia or subacute combined degeneration of the spinal cord, as it causes the onset or worsening of the cord symptoms.) If there is additionally a history of total gastrectomy or destruction of the gastric mucous membrane, then the pernicious anaemia is secondary to such gastric secretory deficiency.

A hyperchromic macrocytic anaemia with a megaloblastic marrow, but with a normal or reduced gastric acidity, may be seen in sprue, idiopathic steatorrhoea (non-tropical sprue), or coeliac disease. Clinically there may be a history of large bulky frequent pale stools with a variable degree of disturbance of fat absorption as shown by the fat-balance test. This type of anaemia fails to respond to vitamin B_{12}, but improves with folic acid or the less purified types of liver extract. The non-tropical sprue-like conditions may also be associated with a normoblastic marrow, in which case they will not respond to folic acid but will require iron.

A similar hyperchromic anaemia, with megaloblastic marrow, but without achylia gastrica, in a pregnant woman indicates macrocytic or megaloblastic anaemia of pregnancy. This again will respond to folic acid, but not to vitamin B_{12}. It does not require continued treatment.

Next article on Clinical Pathology.—"Investigation of Haemolytic Anaemia," by Dr. John F. Wilkinson.

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RESETTLING MENTAL DEFECTIVES

PSYCHOLOGICAL AND SOCIAL ASPECTS*

BY

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The type of adult female defective here discussed is determined primarily by administrative considerations. The ordinary mental deficiency colony caters for all types of defectives and can occupy a considerable proportion of the higher grades in work useful to the institution. A children's hospital such as the Fountain Hospital, which caters for 700 mentally defective children, has no such labour available, as any child who is at all trainable is in the hospital school and occupation centre. For many years, therefore, it was the custom to transfer adult "working" patients from other institutions to the Fountain Hospital to work in the wards and laundry. About 80 such patients were accommodated in the hospital itself, but in 1950 they were transferred to the newly opened annexe, South Side Home, at Streatham.

These patients came from other mental deficiency institutions. It must be stressed that they were classified as unsuitable for licence to a job in the community but possibly suitable for occupation as so-called "workers" in the Fountain Hospital, for which they would receive a small amount of pocket money—formerly sixpence a week but now a few shillings.

Material under Review

Transfers.—From 1918 to the time of writing 327 such adult patients were transferred to the Fountain Hospital. As institutions tend to keep their best workers, those sent to other hospitals are seldom of

*Paper read to the Section of Psychiatry of the Royal Society of Medicine on December 9, 1952.

a high standard. Consequently a large proportion of those transferred were incompetent or emotionally disturbed defectives. As a result nearly half of these patients were in due course returned to their original or some other institution. The remaining 166, plus nine patients who came as children and remained as adult workers, form the group of 175 adult females which is discussed. During the last 10 years an experiment has been conducted to see how these patients would fare in the community. As they had not been sent out on licence by their previous hospital, the presumption had been that they were regarded as unsuitable for supervised life in the community. It seemed, therefore, rather a forlorn hope to work on this group of failures specially selected by others for their unsuitability for licence. Nevertheless the experiment was made.

Discharge Rate.—So far 140 out of the 175 have been found employment in the community, and 101 of these have already been discharged under the Mental Deficiency Acts. Of 100 consecutive patients placed on licence 73 were discharged. Even with carefully selected licence cases a discharge rate of 73% would be a high one, but, as has been pointed out, these patients were regarded as unsuitable for licence, hence their transfer to the Fountain Hospital.

What do we know about the patients in this group? The outstanding feature is that they are a very mixed sample with a wide range of attributes. Their ages range from 16 to 66; their ages at certification as defectives ranged from 3 to 39. The dates of first certification extend from 1909 to 1950. Their ages when first licensed from the Fountain Hospital varied from 17 to 59. In view of this very wide scatter there is no particular type of patient that can be regarded as characteristic of his group, but on an average patients were 20 years old when certified and were placed on licence after an average of 20 years in institutions. It is remarkable that after so long an absence from the world they have been able to survive when suddenly returned to it.

Social Factors

Of the 100 consecutive patients put on licence, of whom 73 have been discharged, 17 (17%) were illegitimate. Children born to unmarried mothers have no normal home life, and illegitimacy nearly always means separation from the mother and institutional upbringing from a very early age. Emotional and apparent mental retardation is common in such children, and one may wonder whether they would all have been certified as mental defectives if they had had a more stimulating and secure childhood. Of the 72 legitimate patients whose sibship is known the average number of siblings is seven. In this relatively small group six patients were one of 11 siblings, and there were families of 12, 13, 14, 15, 16, 17, and 18 children. In the days before family allowances such large families must have implied poverty and overcrowding. The resulting lack of supervision and early training may well have been a factor in the mental immaturity and intellectual subnormality of these patients.

Standard of Education.—Some patients had been to elementary schools but had made poor progress. The majority had gone to special schools, but others had had very little schooling at all because of truancy, bad homes, or too early certification as defectives. A large proportion were therefore almost illiterate. Some later learnt to read and write on their own; others attend L.C.C. evening classes at the South Side Home for reading and writing. It is difficult to assess the level of intelligence of these patients because several factors obscure the true picture. Inadequate opportunities for special education, the stultifying effect of many years in an institution, and the unsuitability of the Binet type of test for these patients make the usual I.Q. figure meaningless.

Intelligence.—In the 100 consecutive licence cases the Binet I.Q. prior to licence ranged from 34 to 73, but experience of the world enabled most of these patients to improve their score on this test. There was usually a gross discrepancy between the Binet and the Wechsler–Bellevue I.Q. Many patients score 20 points more on the latter test, which is a much better measure of their capacity, and some show differences of as much as 35 points. Some of our recent admissions have had I.Q.s of 100, which raises the vexed question of the relationship between intelligence and mental defect. Whatever the I.Q., these patients need experience of the normal world if they are to survive in it. In an institution they are cut off from many aspects of normal life, with a resulting atrophy of cognitive and affective functions. The first step to the rehabilitation of these defectives is to give them possessions and a locker to keep them in, clothes of their own and money to buy them with, stimulating work with adequate rewards for working, and a day off each week when they can go out on their own and exercise their initiative and broaden their experience on buses, in shops, and in cinemas.

Freedom.—For several years those patients at the South Side Home not on licence have been allowed one free day every week, when they go out, usually with another patient, but without any nurse or escort. Armed only with a card giving the hospital address and telephone number, they learn the ropes from each other and from their own experience. Some go to Brighton for the day, and, what is more, come back. It is this opportunity of freedom and experience which is the basis for successful licensing and ultimate discharge. In some institutions patients remain on licence for many years, with the constant threat of recall, and lose all hope of freedom. I believe that in general these patients appreciate their discharge and will not risk recertification. If a female is going to get herself into trouble she will do it while on licence or even in the hospital. Her opportunities are no greater if she is discharged.

Pregnancy

When dealing with female defectives the biggest single problem is the risk of pregnancy. Of the 100 consecutive patients on licence, only one, the hundredth, became pregnant while on licence. Lest it be thought that this group was singularly infertile, I should explain that before their transfer to the Fountain Hospital, and usually prior to certification, 31 of these 100 women had between them had 52 children. Many people believe that almost all of the offspring of defectives are themselves defective. It is encouraging to find that many of these children are normal, and that some, having grown up, have had their mothers discharged to their care.

It will be realized that, whatever the reason given at the time for certification of these patients, illegitimate pregnancy was the precipitating factor in a considerable proportion of the cases. Better facilities for the unmarried mother will reduce the need for certification under the Mental Deficiency Acts. Illegitimate pregnancy is not in itself a sign of mental defect. In view of the high percentage of first pregnancies conceived outside matrimony in the population as a whole, proper evidence of mental defect should be furnished when a slightly subnormal woman is in trouble.

When the large sibships of some of these patients (16, 17, 17, and 18) are remembered, it may be that their fall from grace was precipitated by an inherent fertility while other equally poorly endowed citizens avoided certification by not producing a baby.

Employment; Marriage

These defectives have learnt to do laundry work and various jobs in a gas-mantle factory, but most have obtained domestic jobs in private houses or hospitals. Hospital jobs are the more popular, as the girls are used to institution life and get more company and better pay. As resident hospital domestics they get the full scale of £4 18s. 6d. a week, less tax, insurance, and superannuation, and a charge of 33s. for board and lodging. Some are improvident and spend their money, others have several hundred pounds in

their Post Office accounts. One girl who became a senior maid in a hospital flew to Dublin for her holiday.

The regulations state that the patient while on licence must not form attachments to members of the opposite sex. Usually such behaviour results in the recall of the patient to the institution. This is one of the most difficult problems for the superintendent who wants to give his patients a fair chance in the world but must keep at least one eye on his reputation with the authorities.

It is natural for girls working with normal domestics and earning their living on the same terms in hospitals to behave in the same way as their colleagues. They will go out together and visit dance halls, etc., and meet boys. It is very difficult for a licensed patient to announce that she is a certified mental defective and is not allowed to meet boys.

My attitude has been that if such conduct is forbidden it is usually driven underground and becomes more dangerous in its results. I have encouraged the girls to feel that we should prefer to know if they have men friends and will not automatically ban them. As a result several men have come for a talk. Sometimes the undesirable type out to take advantage of the defective girl is warned of the legal situation with regard to intercourse with a known mental defective. If the friendship seems to be a genuine one the defective's discharge is recommended so that she is free to make normal emotional attachments, and, what is more, is free to get married. If the defective is forbidden to marry she can hardly be blamed if she eventually produces an illegitimate child. Several of my patients who were discharged in good time have since married and settled down satisfactorily in their own homes. Some have produced normal, healthy children; one is proud of her twins.

If ultimate success on licence is to be achieved those responsible for the welfare of this type of patient must be willing to risk several apparent failures with each case. One must persevere in finding alternative jobs until the patient has learnt to adjust herself to outside employment. If failure in the first job on licence is followed by recall and a further period in the institution, the patient has to readjust herself to a different mode of life, and will later be no better able to cope with the world after an interval away from it.

Learning comes by experience, and the maturation which is so evidently delayed in many of these patients will not occur simply with the passage of time spent in an institution. To develop towards normality the individual must experience and be able to respond to the formative stimuli of the ordinary world. Living is itself a conditioned response.

Certification

A scrutiny of the medical certificates which originally formed the basis for the detention of these patients makes one wonder if enough care was given in some cases to the evidence on which the diagnosis of mental defect was based. A practical difficulty in the borderline cases is that there are still so few alternatives to detention in a mental deficiency institution once a social problem case has come to the notice of the authorities. There is as yet no method of providing training and supervision on a voluntary basis comparable to the voluntary status under the Mental Treatment Act or the even freer access to neurosis centres.

Hostels

A considerable proportion of the patients in this experiment welcomed help and guidance if it was offered freely, but rebelled against coercion. This is shown by the behaviour of those who would run away from South Side Home while under a detention order, but who wanted to come back and live there temporarily if they were out of a job after their discharge. There is a need for a special hostel to help patients who have been discharged. If such hostels could be developed they would be available also for those who need help on a voluntary basis if they are to avoid certification.

Such hostels would work in close co-operation with, but distinct from, the mental deficiency institution and share the same team of social worker, psychologist, and psychiatrist to ensure continuity of supervision and follow-up. They could deal with the psychological and social aspects of the resettling of defectives more effectively than can the large institution designed for custodial care.

Conclusions

Mental deficiency practice has consolidated within the framework and experience of an Act designed 40 years ago in very different social circumstances. This has resulted in a wastage of human capabilities which I believe can, in more favourable circumstances, be developed and utilized to better advantage both to the individual and to the community. Mental deficiency of the so-called feeble-minded category is in many cases not a clear-cut clinical entity of an irreversible nature. Too often, as I have tried to show, it is the diagnosis which has created the disease.

THE CONCEPT OF RACE

A conference on "The Concept of Race" was held in London on May 15 under the auspices of the Medical Association for the Prevention of War. The discussion was opened by Professor L. S. PENROSE, F.R.S., who spoke of the mental and psychological characteristics of populations. He deprecated the way in which conclusions in this field were still so often based on impressions, as, for example, that the Chinese were "cunning and impassive," the Irish "bellicose," and the Germans "sentimental and ruthless." These traditional characterizations were not supported by scientific evidence.

So far as the evidence of psychiatry went, the types of mental disorders prevalent in different parts of the world were the same. According to a U.S. Army survey, levels of intelligence were highest in men of West European and Japanese origin, lower in people of Eastern European origin, and lowest in Negroes. In fact, there was great variation between the residents of different States, and the Negroes of New York and Pennsylvania ranked higher than Whites from Mississippi, Kentucky, and Alabama. Where differences were found, they might be either hereditary or environmental in origin; they did not necessarily imply that one group was inferior to another.

Dr. N. A. BARNICOT said that individual variation within groups was usually greater than the differences between groups. It was impossible to group individuals biologically according to geography, nationality, or religion. For example, judged by skin colour the African and Australian natives were similar and were distinguished from the European; judged by MN blood groups the European and African were similar and were distinguished from the Australian; judged by the sickle-cell trait the European and Australian were similar and were distinguished from the African.

There was evidence that characteristics which had been thought to be fixed could be altered by the environment—for example, the basal metabolic rate of Eskimos—and what was at one time regarded as a genetic weakness might have had a real adaptive value. The inheritance of one factor for the sickle-cell trait had been shown to give protection against malignant malaria.

Mr. S. SACHS discussed the social differences between races, and Dr. D. G. LEYS examined the question of whether there was any scientific justification for the separation of society into strata. Doctors, he said, had an opportunity to counter the tendency towards racial embitterment by helping to ascertain and spread knowledge about the biological truths behind the concept of race.

Reports of Societies

SURGERY OF THE ADRENAL CORTEX

At a meeting of the Section of Urology of the Royal Society of Medicine on May 27 the subject of adrenalectomy was discussed. Dr. A. C. CROOKE (endocrinologist, Birmingham United Hospitals) opened, and in reviewing Cushing's syndrome said that subtotal adrenalectomy was the elective operation. It aimed at reducing the level of circulating corticoids from pathologically high to normal levels and might be compared to subtotal thyroidectomy in hyperthyroidism; it could give equally good results.

In the treatment of hypertension adrenalectomy appeared to be of great value in carefully selected cases of rapidly progressive disease, provided arteriosclerosis was not gross. It might act by reducing the level of circulating corticoids from normal to lower levels, by preventing the normal rise in response to stress, or by removing noxious types of corticoids, which were replaced by less noxious cortisone.

In cancer, the object of adrenalectomy was to remove the sex-steroid element of adrenocortical secretion, but this could be achieved as effectively by giving cortisone in a dosage of about 50 mg. daily by mouth. This would cause atrophy of the adrenal cortex and suppression of its secretion. He questioned whether adrenalectomy for cancer could be regarded as an ethical procedure until it had been shown beyond question that a couple of pills of cortisone a day by mouth would not achieve the same result—pills which the patient would have to take anyhow.

Adrenogenital Syndrome

Mr. D. INNES WILLIAMS (genito-urinary surgeon, Great Ormond Street Hospital, London) confined his remarks to the adrenogenital syndrome, and confessed that he could add little to Dr. Lawson Wilkins's masterly review of the subject before the Endocrinological Section on the previous evening. Children with adrenal cortical hyperplasia presented with sex changes (virilism or pseudohermaphroditism in girls, and iso-sexual precocity in boys); an acceleration of somatic growth, followed by premature fusion of the epiphyses; and, during the infant years, a biochemical disturbance resembling in some respects Addison's disease. 17-ketosteroid excretion was raised even from the time of birth. Cortisone, in comparatively small doses, had a remarkable effect; it halted or reversed the virilizing trend, caused an immediate fall in 17-ketosteroid output, and enabled the electrolyte balance to be rapidly restored. Cortisone treatment had to be continuous, and appeared to be replacement therapy.

It had been postulated that in these adrenal glands the precursors of the gluco-corticosteroids could not be synthesized into hydrocortisone but formed pregnanetriol, a substance found in great excess in adrenal tissue taken from one case in the series investigated. The lack of circulating hydrocortisone led to over-production of A.C.T.H., and so to stimulation of the adrenal cortex and excessive output of androgen.

Mr. Williams reported 12 cases (11 female, 1 male), seen in consultation with various medical colleagues. Seven of the females were treated with cortisone, and there had been two deaths from sudden biochemical storms. Two female pseudohermaphrodites had been brought up as boys, and it was thought unjustifiable for psychological reasons to try to reverse the accepted sex, so that cortisone was withheld.

Where the adrenogenital syndrome was produced by tumour as opposed to cortical hyperplasia, the administration of cortisone formed a useful diagnostic test, since in the tumour cases the 17-ketosteroid excretion could not by this means be brought down to the normal level.

Adrenalectomy for Cancer

Mr. L. N. PYRAH (director of surgical research, Leeds University) reported a series consisting of 25 cases of carcinoma of the breast and 3 of carcinoma of the prostate, all having metastases, which had been submitted to bilateral adrenalectomy and gonadectomy. Of the breast cases, 9 had had a major remission; 4 of these were still alive, 5 had later relapsed and died; one case had shown moderate improvement; of the cases showing no improvement, 5 were still alive and 8 had died of cancer. With regard to the prostate cases, 2 had had clinical improvement followed by relapse and death, and one had died of cancer without clinical improvement.

There had been 2 post-operative deaths. The majority of patients stood the operation well. In cases in which there was a major regression the patient experienced a sense of well-being very soon after operation and pain disappeared within 48 hours. Even when there was not much regression of growth, pain was very greatly relieved. The post-operative hormone therapy was that recommended by Huggins, and no difficulty had been found in regard to electrolyte control. The patients who had a remission (which was shown clinically, radiographically, and histologically) sometimes improved in a dramatic fashion.

Mr. J. D. FERGUSSON (surgeon, Central Middlesex Hospital) reported similar experiences in 32 cases of total adrenalectomy for advanced malignant disease (17 prostatic cases and 15 breast cases). Before embarking on this form of treatment he liked to have evidence that the tumour had previously been hormone-dependent. A remission of symptoms was obtained in about three-quarters of the cases together with evidence of growth regression in many instances. Most of the prostatic cases lost their pain, and marked benefit was experienced in breast cases with pulmonary metastases. Patients previously bedridden had returned to normal activity.

Total Adrenalectomy in Hypertension

The case for total adrenalectomy in the treatment of progressive hypertension was presented by Mr. HOWARD G. HANLEY (surgeon, St. Peter's and St. Paul's Hospitals, London). The rationale of the therapy was to remove the source of salt-retaining steroids. He first reviewed the results of past workers who had employed a subtotal resection. He had operated on five patients with hopeless malignant hypertension. The results had been surprisingly good even when the blood pressure had not fallen appreciably, as in the two cases with advanced arteriosclerosis. All, however, had shown marked improvement in the eye changes, while signs of cardiac failure had disappeared. He quoted the case of a woman of 46 with pyelonephritis whose urea clearance had risen from 45% of normal to 85%. Renal failure was the main contraindication to this form of therapy. It might be justifiable in the future, he said, to perform adrenalectomy at an earlier stage of the disease, before the onset of arteriosclerosis, and the long-term follow-up of these cases would be invaluable in determining this point.

LOCAL MEDICAL SOCIETIES

Manchester Medical Society

Woman, unlike the cow, declared Dr. F. Charlotte Naish, speaking to the Section of General Practice on March 22, had not been bred for her good milking powers; on the contrary, we had kept alive the children of the poor milkers by wet-nursing and later by clean and careful artificial feeding. Possibly there were 15% of very poor milkers, 25% of moderately good milkers, and 65% of fully adequate milkers. What should we do with the 25% of moderately good milkers? They should be taught complementary feeding, she said. It had been stated that complementary feeding took too much time, but it was just a matter of suitable techniques. There was no need to do test-weighing if the baby was fed to its appetite.

Correspondence

Cortisone and Aspirin in Rheumatoid Arthritis

SIR,—The interesting and important M.R.C. report on the relative values of cortisone and aspirin in rheumatoid arthritis, published in the *Journal* of May 29 (p. 1223), has already received glaring publicity in the lay press, and will undoubtedly have considerable medical and political repercussions. Like all statistically controlled trials, it will be surrounded by an aura of sanctity, and will provide an unchallengeable "gospel" for years to come. Those who read it superficially will merely conclude that aspirin is as effective as, and a far safer treatment for rheumatoid arthritis than, cortisone. They will naturally relegate the latter to the rubbish heap of extinct remedies. Those who read it carefully—especially if they have had experience of the drug—will accept the conclusions that cortisone given in this particular way, to this particular group of patients, and judged by these particular criteria, is not a justifiable form of therapy. But they will still await statistical guidance on the wider and far more fundamental issues about the indications for cortisone therapy.

As Professor Hill has stated,[1] there are an infinite number of questions we might ask about any new regime, but the statisticians prefer to answer a single question at a time—that is, "If to a defined type of patient Y gr. of drug X are given daily by one particular route in so many divided doses, what happens?" Without wishing to appear facetious, I can tell him what happens: the correspondence columns of the medical press are filled for weeks to come by letters which, being paraphrased, read, "Ah, yes, but if you use another group of patients and give the drug in different dosage, and by a different route, you will get startlingly different results." And so the controversy continues.

My comments on this trial are largely a text on which to hang a plea to the statisticians to modify their rigid approach to clinical trials. Perfect statistical techniques are not possible when dealing with biological material, nor is it possible at the early stage at which the Medical Research Council generally formulate their trials for them to lay down the optimum regimes which are not liable to subsequent criticism. I would suggest that a more useful, if less perfect, protocol on which to base a clinical trial is: "Does drug X, given under *optimum* conditions (as judged by experienced, reliable, and unbiased clinicians), give better results than drug Y?"—leaving the clinicians to select both the patients and to adjust the dosage schedules to individual requirements. Possibly the "cross-over" technique mentioned in your leading article (p. 1249)—in which the patient becomes his own control—is the best compromise. A trial based on this essential degree of flexibility would give a far more useful and a broader picture of the problem, and at the same time would lack some of the specious sanctity which now arises from the statisticians choosing certain highly inaccurate assessments (such as joint tenderness and range of movement) as a means of overall assessment, whilst ignoring entirely such imponderable but important clinical features as the degree of stiffness and the patient's sense of well-being. As a *reductio ad absurdum*, unless we insist on some degree of clinical discrimination, we will soon be handing over these trials to technical assistants who will make a set of measurements without even asking the patient how he feels. We would do far better to learn to evaluate subjective factors in our patients than to ignore them.

To return to the cortisone–aspirin trial: *Selection of patients.*—The protocol laid down that the patients must have had the disease for not less than three months and not more than nine months. They should be suitable for either cortisone or aspirin therapy. Patients fulfilling even the first part of this criteria were exceptionally hard to find in two large clinics, drawing patients from all over England. When such a patient did materialize, he was usually unsuitable for both types of therapy, either because the disease was too mild or because (as is so characteristic of this early stage of the disease) it was so unstable that it was almost impossible to evaluate any therapeutic results. No responsible clinician would give cortisone at this stage. None the less, they were included in the trial in most cases because more suitable material, fulfilling the criteria, was not forthcoming. This is probably the reason why the functional capacity assessments were identical in each group at the end of the year. It is of some interest that the one case (case 1 on p. 1225), whose disease was rapidly progressive, "drew" aspirin, and after six months he refused to continue in view of his deterioration. He was withdrawn from the trial, and was subsequently treated independently with cortisone. He is now back on full employment as a gold blocker; his disease is still very active, but well controlled. Thus he provides an excellent example of the "cross-over" technique. I am quite confident that no other type of drug would have controlled this man's disease. I am not convinced that in a small sample (such as the present one of thirty pairs) such anomalies are automatically ironed out by "pairing" on the basis of age and sex alone. It is of greater importance that one should aim to pair, if possible, similar clinical types.

Dosage.—Hench *et al.*[2] have laid down that it is of extreme importance to "individualize" the dose in cortisone therapy, and to give the minimum necessary to control most of the symptoms. The Medical Research Council trial required an initial dosage of 300 mg./200 mg./100 mg. followed by a sudden drop to 50 mg. in the second week, culminating in a period of abstinence on the thirteenth week, twenty-sixth, and twenty-ninth weeks, etc. It is difficult to imagine a regime so calculated to insult the psyche and the adrenals of the rheumatoid patient, and there is even some evidence (Lansbury, personal communication) that to allow the patient to get out of control in this way is very liable to spread the rheumatoid process. Certainly my own personal experience suggests that whenever a patient's disease breaks through the cortisone suppression, as a result of dose reduction, it may need considerably higher dosage to get him under control again. There are many other minor points of assessment on which one might comment in this trial, but they are of insignificant importance compared to those already mentioned.

To summarize: This trial has been expensive and laborious; it answers fairly conclusively, in spite of its technical imperfections, a problem with which few clinicians would disagree—namely, that there are very few cases of early rheumatoid arthritis for which cortisone is indicated. It completely fails to shed any light on the main problems of cortisone therapy. A plea is made that statistical rigidity in the planning of clinical trials should be modified so as to take some account of the clinician's discretion. In other words, the pendulum away from therapeutic empiricism has swung too far.—I am, etc.,

London, E.1. JOHN H. GLYN.

REFERENCES

1 *New Engl. J. Med.*, 1952, 247, 113.
2 *Proc. Mayo Clin.*, 1949, 24, 181.

SIR,—In the admirable report (*Journal*, May 29, p. 1223) by the M.R.C. and Nuffield Foundation Joint Committee it is said that cortisone or aspirin was given "together with any other basic treatment that might be required (splints, physiotherapy, etc.)." One wonders what are the criteria which determine that physiotherapy is "required," and what particular variety of physiotherapy is in mind. This method of treatment embraces massage of various kinds, remedial exercises of infinitely variable scope, radiant heat, cold, diathermy, wax baths, hydrotherapy, and several types of electrotherapy. Is there any evidence that any of these remedies, with the possible exception of remedial exercises, gives any benefit beyond, in some cases, symptomatic relief? And is this symptomatic relief as great as that derived from regular aspirin, which is so much cheaper

and which can be had so easily, without dislocating the patient's life? May I suggest that the M.R.C., whose committees have done such useful work in obtaining evidence as to the value of drugs, gives its attention to examining the claims made for physiotherapy in treating rheumatoid arthritis?

May I also suggest that the M.R.C. inquires into the value of rest for this disease? It is categorically stated in the latest medical articles that rest is "essential," though the authors maintain an attitude of judicious reserve in the matter of the duration and degree of this rest in various circumstances. In *Medical Treatment*,[1] for example, it is said: "First, rest, mental and physical, general and local, is of paramount importance. In all cases, this rest is as essential as it is in pulmonary tuberculosis, and it is especially indicated when shock, worry, and fatigue have been the major factors in causing the onset of the disease. An initial period of rest in bed away from worry, which in a particular case means away from home, is most necessary." It may be conceded that when the joints of the feet or legs are badly affected, or when the patient has marked constitutional symptoms, a period in bed is indicated. Even that greatly abused word "essential" may be not out of place here. But is there any evidence that rest of a degree greater than that dictated by the symptoms has any effect on the course of the disease? How grateful we should be to the M.R.C. if it provided such evidence and we were no longer dependent on the *ex cathedra* pronouncements of the textbooks.—I am, etc.,

Farnham, Surrey. J. W. TODD.

REFERENCE

[1] *Medical Treatment*, 1951; edited by G. Evans. London.

Women in Medicine

SIR,—The pre-registration year of internship mentioned by Mrs. Ruth D'Arcy Hart in her letter (*Journal*, May 29, p. 1266) is a statutory requirement prescribed by the Medical Act, 1950, and the Medical Act, 1950 (Period of Employment as House Officers), Regulations, 1951, made thereunder by the General Medical Council. Section 2(1) of the Act requires "employment in a resident medical capacity in one or more approved hospitals or approved institutions. . . ." but Section 2(5) states that "reference to employment in a resident medical capacity shall be construed as reference to employment in the practice of medicine, surgery or midwifery, where the person in question is resident in the hospital or institution where he is employed *or conveniently near thereto*, and is by the terms of his employment required to be so resident" (my italics). Thus compulsory living-in during this year is not a statutory requirement, and it is to be hoped that hospital authorities will not overlook this fact when considering an application to live out from a married woman house officer with family responsibilities in a "pre-registration post." It is, of course, the general practice to require all house officers to be resident owing to the nature of the duties involved and the difficulty in finding living-out accommodation conveniently near to the hospital. It would be a pity, however, if, in areas where suitable arrangements can be made, hospital authorities fail to realize that Parliament itself has recognized that "employment in a resident medical capacity" does not necessarily mean compulsory living-in during the pre-registration year.—I am, etc.,

London, W.C.2. ALISTAIR FRENCH.

SIR,—Non-resident "residents" can be very useful to hospitals, but only on condition that they pull their weight. This means that they must live near enough to the hospital, be on the telephone, and if necessary possess means of transport, so that they can do their proper share of night work. Nor, however much we may pity her dilemma, may a woman opt out of this duty because, for instance, the baby has whooping-cough. In any hospital post the patients' needs must be paramount.—I am, etc.,

Hove. C. M. OTTLEY.

Tuberculin Testing

SIR,—I would like to add my experiences in tuberculin testing to the recent correspondence. This winter I have jelly-tested approximately 250 children, using the "flourpaper" technique and checking these results with a Mantoux test. While I have had many positive jelly tests and a negative Mantoux, I have never had a negative jelly test and a positive Mantoux. The jelly tests were only read as positive when there was vesiculation and erythema on the old tuberculin side of the intra-scapular area. The point I cannot understand is that these false jelly tests should give a reaction on the old tuberculin side and no reaction on the control side. I find no association between upper respiratory catarrh and false positive jelly tests.

While there is no doubt that the Mantoux test is the more accurate, it would seem that the jelly test using the "flourpaper" technique is of value when negative.—I am, etc.,

Surbiton, Surrey. T. J. C. WARRINER.

Pleural Effusion in Young People

SIR,—A fundamental principle in the management of tuberculosis is involved in the plea for "proper assessment and treatment of cases of pleural effusion in young people" and the advocacy of "treatment in special units" (presumably residential) with educational facilities, made by Drs. F. J. Bentley and S. Grzybowski (*Journal*, May 29, p. 1263). They suggest that "antibiotic therapy in selected cases, together with an adequate period of graduated rest and subsequent rehabilitation, will prevent the development of serious tuberculous trouble in many instances later in life." They are really pleading that children should be separated from their parents and incarcerated in an institution for long periods, since in their recently published book[1] they state that the average period of bed rest in High Wood Hospital was 17.8 weeks and the average stay in the sanatorium 8.5 months for children with benign primary tuberculosis complicated by pleural effusion. Is this undesirable separation from parents, and this most expensive form of treatment, really necessary? It can be justified, perhaps, as a short-term measure for children deprived of parental care and adequate nutrition and housing, provided that the main efforts of the State are directed towards improvements in these conditions, for these are the real foundation of the total individual resistance that must be maintained after proper management of the acute stage, if serious secondary disease is to be prevented. In the case of children with good homes, sanatorium treatment of pleural effusion is of course quite unnecessary. Their assessment by general practitioners and the chest clinics is done well at present, and the rest treatment, which is all that is necessary, is best given in their own homes where the normal parental relationship can be maintained and strengthened, and perhaps the seeds of juvenile delinquency prevented from germinating. Even antibiotic therapy can be given at home if this is proved to be worth while; but, in 19 out of 167 chest clinic cases of benign primary disease complicated with pleural effusion which I observed under treatment with antibiotics the results were in no way different from 148 cases being treated by rest alone during the same period.

Treatment of pleural effusion complicating the benign primary complex by rest for a few months is certainly to be strongly advocated, but its only effect is to hasten quiescence of the primary complex and the concomitant building up of acquired resistance. Once this has been achieved, even in untreated cases, the treatment given during the active stage of the primary disease has no influence on the subsequent development of secondary tuberculous disease. That depends wholly on the *maintenance* of acquired resistance during the subsequent period of quiescence, and especially in the first three years of it. In a series of 184 active primary cases which I have observed to quiescence, or which were diagnosed quiescent at first

examination, and all of which subsequently developed secondary pulmonary tuberculosis, the observed interval between quiescent primary and active secondary disease was three years or less in 67%. Accordingly it is the maintenance of a high level of resistance during the first few years of quiescent primary disease that is the most important factor in the prevention of secondary pulmonary tuberculosis. This means that the accidental and physiological factors in resistance—namely, standard of living, good working conditions, housing and nutrition, and special care in relation to age and sex—are more important in this respect than management of primary disease in institutions. The efficiency of management of the primary disease merely determines the duration of its activity, while efficiency in *maintaining* resistance determines the duration of the period of quiescence.—I am, etc.,

London, N.W.8. M. SEKULICH.

REFERENCE

1 *Tuberculosis in Childhood and Adolescence*, 1954. N.A.P.T.

New Apparatus for Insufflation Test

SIR,—The importance of Rubin's CO_2 insufflation test from a therapeutic and diagnostic point of view is to-day universally acclaimed. That being so, it is essential that the requisite apparatus should be in every gynaecological operating theatre, out-patient department, and consulting-room. But such an instrument must be strong, simple and not fragile, transportable, and independent of varying types of electricity, for there are still a great many places throughout the Commonwealth and Colonies where such an instrument is required but electricity does not exist.

For these reasons, with the help of Messrs. Down Bros. and Mayer and Phelps, Ltd., I have devised a simple, sturdy, foolproof, and readily portable apparatus which is worked by clockwork as was the original Rubin instrument. The picture shows the machine. The kymograph is on a horizontal disk and the pen with its perspex container is activated by a CO_2 cylinder fitted with a reducing valve. This cylinder is of standard 1 lb. (0.45 kg.) size enabling more than 200 patients to be dealt with. It will also permit continuous insufflation of not less than 30 cases during any operation such as salpingostomy or salpingolysis. The whole unit is housed in a leather-covered case with a detachable lid allowing free access to all the controls. It is fitted with the correct cannula and rubber connexion tubing for immediate use.—I am, etc.,

London, W.1. V. B. GREEN-ARMYTAGE.

Varicocele and Male Subfertility

SIR,—I was most interested to read Dr. J. K. Russell's article (*Journal*, May 29, p. 1231) pointing out the high incidence of varicoceles in subfertile males. Having to deal with about 2,000 subfertile men every year, I can confirm his findings and would say that the incidence is probably even higher than his figures suggest. Since I have been collecting data on this problem from a different point of view—namely, that of therapeutic possibilities—I felt that the following observations might be of interest to your readers.

In my opinion, the effect of varicoceles on the semen picture represents only one aspect of a larger group—that is, that of disturbances of testicular temperature regulation. This group should include hydroceles, incomplete descent of the testes, and the wearing of scrotal supports. For normal spermatogenesis testicular temperature has to be kept about 2° C. below that of the body. A varicocele acts as a radiator at blood heat which follows testicular movements and thus counteracts the local thermoregulatory mechanism. This would explain the fact that a unilateral varicocele may depress spermatogenesis in both testes, as Dr. Russell points out. The semen picture in many cases falling within this group is characteristic, showing increased volume, oligozoospermia, poor morphology, and desquamated precursors of spermatozoa. If both the surgeon and the patient understand the underlying principle so that as much as possible of the varicocele is excised, and no scrotal support worn longer than necessary, the results of treatment are surprisingly good. Of a series of subfertile men treated by varicocele excision (mostly unilateral) twelve of the first fourteen completed cases showed unmistakable improvement, with seven pregnancies within six months of operation. Details of this series which was begun in 1950 are ready for publication, but may be reserved until the proposed series of fifty is completed later this year.

As to the risks of surgical treatment, provided it is in highly skilled hands my experience does not confirm this. Of the more than forty cases operated on by Mr. H. G. Hanley we have not seen a single case of infection, epididymitis, or testicular atrophy. Regarding the latter, we must remember that the testis on the affected side is often small and soft to begin with, and this may be mistaken for post-operative atrophy afterwards. On the other hand, both Mr. Hanley and myself, and sometimes the patients, have noticed that the testis increased in size after operation, as one would expect with increased spermatogenesis. In concluding, I would express my conviction that if we paid more attention to the problems of faulty testicular temperature regulation we should have far fewer cases of "intractable oligozoospermia" and might begin to emerge from the therapeutic pessimism so widespread in this field.—I am, etc.,

London, W.1. H. A. DAVIDSON.

SIR,—Dr. J. K. Russell's excellent paper (*Journal*, May 29, p. 1231), which demonstrates the higher incidence of varicoceles in subfertile than in fertile men, lends further support to Dr. H. A. Davidson's,[1] which shows that a failure of the scrotal temperature-regulating mechanism can depress normal spermatogenesis, and that a common cause of such a failure is the presence of a varicocele. Having operated upon over 50 varicoceles for this condition, I am quite convinced of the therapeutic value of removing such a scrotal radiator, which, even if unilateral, can obviously influence both testicles.

Any surgical procedure can be dangerous and should only be performed for very good reasons, but it is perhaps unfortunate that a surgeon of Professor Charles Wells's eminence, as quoted by Dr. Russell, should overstress the dangers of this particular operation. If the varicocele is grouped with the piles and varicose veins at the end of the list, to be done by the house-surgeon, I would agree with Professor Wells, but would add that all three operations are equally potentially dangerous. However, while humbly realizing

that—but for the grace of God—there go I, we have not seen any serious complications following the excision of a varicocele so far. I have used a scrotal incision as advocated by Sir Heneage Ogilvie (*Journal*, April 17, p. 934) ever since it was taught to me in 1935 by the late Mr. F. McG. Loughnane at all Saints' Hospital, and I have not encountered any of the serious complications hinted at by Mr. C. J. Cellan-Jones in his letter to your *Journal* (May 1, p. 1039).

The very high incidence of male subfertility is not generally appreciated, and Dr. Russell's paper, quite apart from its academic value, has done a service in drawing attention to this fact.—I am, etc.,

London, W.1. HOWARD G. HANLEY.

REFERENCE

1 *Proc. roy. Soc. Med.*, 1953, 46, 841.

Sex Diagnosis of Blood

SIR,—For some time we have been considering the possibility of sex differences in the human blood and have been particularly interested in the nuclear morphology of the polymorphonuclear neutrophil leucocytes. We have found a structural difference between the nuclei of the neutrophils in the two sexes. In the female there are typical drum-stick appendages which cannot be found in the male. In over 50 films studied of blood from over 25 males and 25 females the examiner diagnosed the sex accurately on this basis without previous knowledge of the origin of the blood. A paper giving a detailed description of the morphological differences has been submitted for publication and will appear shortly in this *Journal*.—We are, etc.,

WILLIAM M. DAVIDSON.
D. ROBERTSON SMITH.

London, S.E.5.

A New Oral Diuretic

SIR,—A potent oral diuretic is now available. "Mercloran" ("neohydrin," "chlormerodin"), however, was reported in your annotation (*Journal*, January 16, p. 144) to cause serious gastro-intestinal symptoms in a large proportion of patients, so that it had to be withdrawn in about two-thirds. I was interested to read that Dr. William A. Leff (*Journal*, May 8, p. 1093), using therapeutically effective doses, found the incidence of toxic symptoms to be only 10%. My own experience has been similar, and, in the hope that this valuable drug will not be withheld because of reputed toxicity, I venture to record the results of a small clinical trial.

The subjects, 28 men and 4 women, were patients in a hospital for the elderly chronic sick, their ages ranging from 60 to 90. Thirty-one were suffering from chronic congestive heart failure, one from hepatic cirrhosis with recurrent ascites and oedema. Degenerative heart disease was the cause of failure in 22, hypertension in 6, and cor pulmonale in 3. Most of them had been receiving mersalyl regularly once or twice weekly, in addition to digitalis, but salt had not been restricted; fifteen were in frank congestive heart failure. Mercloran was given in a single dose each morning for six days per week. The initial dose in each case was 3 tablets (each containing 18.3 mg. of mercloran, equivalent to 10 mg. of mercury). This dose was gradually adjusted to the minimum which controlled oedema and orthopnoea. The daily maintenance dose was 2 tablets in 7 patients, 3 tablets in 5, 4 in 10, and 5 or 6 in the remaining 10 patients. Toxic effects were encountered in 8 of the 32 patients (nausea and vomiting in 4, diarrhoea in 4), and in each case the symptoms appeared within the first four weeks. In 6 cases the drug had to be withdrawn, usually because of vomiting, but further experience leads me to believe that a smaller initial dose enables more patients to develop tolerance. The remaining 26 patients have received the drug for 8 to 12 weeks. Most patients have felt better, and their oedema has either disappeared or been substantially reduced. The responses have in my opinion been superior to those given by parenteral mersalyl. Outside hospital, long-term dietary salt restriction is unsuccessful, and frequent parenteral therapy may be irksome. Mercloran is therefore suitable for wider trial in chronic heart failure.—I am, etc.,

Sheffield. F. J. FLINT.

Skin Responses in Asthma

SIR,—In view of the recent correspondence in your columns, our recently concluded investigations of skin responses in bronchial asthma[1] may be of interest to your readers. We have used the prick test in order to test the skin responses of 300 patients with respiratory allergy and of 100 normal subjects, and have found their outcome in the same subject most variable. Only in 3 out of 21 patients could we reproduce exactly the same result on two different occasions. The correlation between the positive skin reactions and history and clinical manifestations was poor. Although in many cases of clinical allergic disease the offending allergen gave a positive skin reaction, many other allergens produced positive reactions whose causative agency was improbable or could be excluded. This was not surprising: about 50% of our normal subjects had also one or more positive skin reactions, as other observers have noted. We have concluded that in respiratory allergy tests of the skin, as of any shock organ other than the respiratory passages, are of very limited value. They may be used as a guide in those cases in which the history gives no clue to the offending allergen, but without environmental or bronchial tests they cannot be regarded as conclusive evidence.—We are, etc.,

H. HERXHEIMER. H. L. UTIDJIAN.
P. MCINROY. H. M. D. UTIDJIAN.
K. H. SUTTON.

London, W.C.1.

REFERENCE

1 *Acta allerg. (Kbh.)*, 1954, 7. In press.

A Question of Seniority

SIR,—With reference to Dr. M. W. Littlewood's letter (*Journal*, May 22, p. 1210), the Hospital of St. Bartholomew was founded in 1123 by Rahere, the court minstrel of Henry I. It was established as a public hospital with an organization distinct from that of the Priory of St. Bartholomew. The date of foundation of these two institutions is known from the *Liber Fundacionis Ecclesie Sancti Bartholomei* written by a canon of the priory 29 years after the death of Rahere.[1] The first royal charter to the hospital was given by Henry I in 1133, and copies of this document exist in the hospital and in the Public Record Office. The hospital archives contain a deed of Rahere himself dated 1137 and many other documents of the twelfth century.

The Priory of St. Mary Overy in Southwark is known to have been in existence between 1120 and 1125, and may or may not have been founded as early as 1106. No documentary evidence proving the existence within this priory of a public hospital has yet come to light. The earliest reference to a hospital in connexion with it occurs in 1212, when, consequent upon the fire in Southwark which destroyed most of that suburb and all the priory except the refectory, the canons of St. Mary founded a "hospital" on their own lands near the priory, in which they celebrated divine service until the priory was rebuilt. The reference occurs in the *Annals* of Bermondsey Abbey. In 1213, in the Cartulary of St. Thomas's Hospital (now in the British Museum) and in the Curia Regis Rolls, mention is made of Amyas, Archdeacon of Surrey, who is called the Master of the New Hospital of St. Thomas. After that date references to this hospital abound. The claim of St. Bartholomew's Hospital to date from the twelfth century is founded on documentary evidence, that of St. Thomas's appears to rest so far on conjecture alone.—I am, etc.,

GWENETH WHITTERIDGE,
Archivist to St. Bartholomew's Hospital.

1 Published in an English translation in 1923, by E. A. Webb.

Acute Post-operative Laryngeal Obstruction

SIR,—Since the breathing end of the patient is very much the otolaryngologist's affair, it may be permissible for one to enter the forum of the anaesthetist, the more so if he can go back to the days when he passed many of the endotracheal tubes himself. Some of the newer recruits to anaesthesia seem to resent any guidance about children and tend to dismiss the advice of a middle-aged laryngologist as so much out-of-date fuss. Nevertheless, some things are worth repeating.

The narrowest diameter in the child is not at the glottis; it is below the glottis, and here the lining membrane is so sensitive that it may become oedematous with no more than a bad cold. Its reaction is such that modest pressure will produce oedema, and the longer the pressure the greater the oedema. A tube which is passed easily may not be withdrawn quite so easily, unless the operation has been short. A little oedema in the subglottic space of the small child, let us say a millimetre or two all round the circumference, is enough to cause a croupy cough and sometimes distress; slightly more may cause severe obstruction. It is to be noted that the same absolute quantity of oedema in the larger lumen of the adult may not even be an inconvenience. I speak as one who has carried out the tracheotomies or sat by the bedside wondering whether to act or not.

I fear that there is a growing tendency to use tubes which are far too big for small children, and this without any reference to the chance of injury in the passing; and I would say that far too little attention is given to the probable duration of operation in the child who is about to be intubated. It is quite salutary to observe children who have been intubated, to ask them to cough, to listen to the noise, and to meditate thereon. And sometimes the cough may have something to do with the cuff.—I am, etc.,

Newcastle-upon-Tyne, 2. F. MCGUCKIN.

Motor-cyclists' Protective Hats

SIR,—Some prominence was recently given in sections of the lay press to a fatal accident in which the motor-cyclist victim was wearing a protective hat made to the requirements of British Standard 2001. A member of the medical profession who gave evidence at the inquest was reported as saying that the helmet was "too flimsy," and the jury in the case expressed the opinion that the "safety standards of certain makes of motor-cyclists' crash helmets should be investigated."

It would, we think, be of some value to the profession at large if the relevant facts on this matter were recalled. The British Standard for protective hats for motor-cyclists was based on all the information at the time of its publication—including the extensive researches of the Radcliffe Infirmary. The late Professor Sir Hugh Cairns represented the B.M.A. on the Technical Committee of the British Standards Institution which prepared the standard, and the Association's present representative on that Committee is Mr. D. W. C. Northfield, of the London Hospital. The Committee also included representatives of the Road Research Laboratory, the Royal Society for the Prevention of Accidents, the Ministry of Transport, and other Government departments, as well as the Auto-cycle Union and industrial groups concerned both with materials used in protective hats and with their manufacture. Before publication all these bodies and groups received copies of the draft standard for approval.

The salient features of the standard are: that the outer shell shall be durable, smooth, and free from projections; it shall be attached to an inner harness with space between the harness and the outer shell; it must withstand an impact test, pressure tests both fore and aft and sideways, a test for strength of harness, and a substantial weight test on the chin strap to ensure that the helmet is not likely to come off in an accident. The standard also stipulates that if a peak is fitted this must be pliable, so that it cannot possibly operate as a fulcrum, and, if in fact it should receive a frontal blow, would bend and give added protection to the face and particularly to the eyes.

The Safety Division of the Road Research Laboratory has for some time been carrying out investigations on protective hats, and all the results tend to endorse the provisions of the present British Standard. The only new feature to improve the standard which is at present being considered is the possibility of incorporating additional padding between the harness and the shell. An adequate safety hat for the ordinary motor-cyclist must obviously be a compromise between what is economically possible for him to purchase, attractive enough for him (or her) to wear, and, while giving the maximum possible protection to the skull, not so resistant that it might transmit the shock to other equally vulnerable parts of the body. The standard as published represented the most carefully considered compromise between these factors which the available scientific and technical knowledge could provide.

A final point which should be recorded is that practically all the responsible makers of motor-cyclists' hats are now licensed to use the British Standards mark as an independent assurance of conformity with the requirements of B.S. 2001. The B.S.I. employs inspectors who regularly visit makers' factories and check both their production methods and their test procedures. Failure to maintain the standard would result in the manufacturer losing his licence to use the British Standards mark.

It is unfortunate that, although there are numerous known cases of very severe accidents at high speeds where certain death would have resulted if the rider had not been wearing a protective hat made in accordance with the British Standard, these incidents never achieve the publicity given to the much rarer cases in which a motor-cyclist wearing a protective hat suffers serious injury or death.—I am, etc.,

London, W.1. E. WOODBRIDGE,
Assistant Technical Director,
British Standards Institution.

Standard of Anaesthetics in Britain

SIR,—I would like, through you, to thank Dr. Geoffrey Organe (*Journal*, May 29, p. 1267) for his reproof, so urbane, even at times paternal, arousing in me all the emotion of George Washington as he stood beside his misdeed in the garden. Yet his letter misses the main point—namely, that never again should his innovation of admission of press reporters to surgical meetings be repeated. None of the speakers were warned, and I am still thanking God that I stopped where I did, because if I had gone on to some poignant case records it would have been terrible. Lay press reporters mean well, but cannot separate wheat from chaff: contrast your absolutely accurate six-worded report —"Mr. Dickson Wright discussed cardiac arrest," all wheat, no chaff—with that of the three columns of the *Daily Express*, all chaff and no wheat.

If I might make my point again, as it is rather hard to gather it from either account: Heart stoppage is easily overcome and does no harm, provided the preoccupied surgeon is told immediately. Modern anaesthetic machines give a semblance of life after it has departed and the finger, if it happens to be on the temporal or radial pulse, does not seem good enough. For the present, the price of safety must be perpetual vigilance, until some certain machine arrives to tell us (*a*) when the heart is wavering and (*b*) the moment it stops.—I am, etc.,

London, W.1. A. DICKSON WRIGHT.

SIR,—Dr. Geoffrey Organe, as president of the Association of Anaesthetists of Great Britain and Ireland (*Journal*, May 29, p. 1267), is to be congratulated for taking Mr. Dickson Wright to task for certain remarks he made about British anaesthetists before an assembly of American surgeons on May 18 at the Royal College of Surgeons of England. Admittedly the situation was intensified by the fact that these remarks were made the basis of a rather sensational article in the *Daily Express* the following day; this could not have happened, however, unless these disparagements

had been made in the first place. Had they been meant seriously the Council of the Association of Anaesthetists might well have been advised to report the matter to the ethical committee of the General Medical Council. Assuming, however, that Mr. Wright was merely indulging in his peculiar "form of jocularity" he appears to have fallen into the trap against which all teachers of elocution warn those who endeavour to enliven their discourses with humour.

Even the most elementary manuals on the art of public speaking emphasize that there are three distinct factors involved in delivering a speech : "The audience, the speech, and the speaker. In other words, the occasion, the oration, and the orator; or to whom you speak, what, and how."[1] It is noteworthy that all these manuals impress upon readers that *the audience is the most important element in the understanding of any speech.* Mr. Wright delivered his talk before an assembly of American surgeons whose sense of humour differs from our own and who are less familiar than we with the technique of introducing humour to lighten an otherwise stodgy scientific discussion. It is not unlikely, therefore, that, in common with the reporter from the *Daily Express,* many of them took these remarks at face value. This is unfortunate, for I am sure that anaesthetists in Great Britain are no less conscientious than those in the U.S.A. or other countries. Unlike surgeons, they spend all their working hours in the enervating atmospheres of operating theatres; and, owing to the shortage of junior staff, those of them who work in peripheral areas do more emergency work than their surgical colleagues, and are usually hard put to it to find a locumtenent to enable them to take even part of their statutory holidays.

Reverting to Mr. Wright's exaggerations, the lessons to be learnt are to curb the impulse to be amusing at the expense of the reputations of other colleagues, and to modulate the mode of delivery of all speeches to suit the particular audience concerned. Beau Brummell witticisms which may go down big among private friends, and the histrionic hyperbole which animates an after-dinner speech, have only a limited place during an international scientific congress, and then only when the entire audience is familiar with or conditioned to the sense of humour of the speaker concerned.—I am, etc.,

London, S.E.5. A. H. GALLEY.

REFERENCE

[1] Pelsma, R. J. (1924). *Essentials of Speech,* part II, chapter 2, p. 179. Sir Isaac Pitman & Son Ltd., London.

SIR,—Addressing a surgical section meeting of the American College of Surgeons held recently at our own Royal College of Surgeons, Mr. Dickson Wright, of St. Mary's Hospital, London, is quoted in a national daily newspaper as saying, "The lives of hospital patients undergoing operation are being endangered because anaesthetists are relying too much on their machines instead of watching the patient's condition. . . . It will not surprise me to find that the latest anaesthetic machines are fitted with an ash-tray and a stand for holding a newspaper." The report continues that Mr. Dickson Wright revealed that several times during operations anaesthetists have told him that the patient had a good pulse when, in fact, the heart had stopped beating, and the quotation continues : "By the time the anaesthetist tells the surgeon that a patient's heart has stopped, it is sometimes too late to do much about it."

Mr. Wright has chosen this particular opportunity when speaking to a great audience to deliver an accusation of gross carelessness and slackness against anaesthetists all over the world. For years there has been continuous work undertaken by anaesthetists and manufacturers towards making anaesthetic machines safer. British manufacturers, Government departments interested, and individual anaesthetists are giving considerable time and thought to the design of anaesthetic machines.

Anaesthetists are junior members of the surgical team, but they have a contribution to make to that team and in doing so the surgeon often welcomes them as colleagues. In this way surgical successes and advancement of knowledge may sometimes result. What Mr. Dickson Wright has said might appear to destroy this widely held belief in the value of the surgical team, but let him have no fear, he will not do this : modern surgery of all types has thrived on the experiences of surgical teams fashioned in the second world war. These teams continue under different titles in friendship and solid work throughout the large medical centres of this country. But what harm is caused to the patients unfortunate enough to have read the report in the newspaper quoted above? Here is someting far more serious, and I ask Mr. Dickson Wright to reflect upon what a patient must have felt awaiting major surgery in the afternoon who happened to have read that newspaper in the morning. Also, what must that patient's relatives have thought as well? It is clear from his attitude that Mr. Dickson Wright had not considered in any way this effect of his address, and it would be a most generous action on his part if now he could see his way to withdraw the whole of his opinion about anaesthetists.—I am, etc.,

London, W.C.1. R. W. COPE.

Complaints about Catgut

SIR,—During the last ten years or so my advice as a surgeon has from time to time been requested by a firm of manufacturers with regard to complaints from hospital surgeons concerning the alleged unduly easy breakage of their catgut in use during surgical operations. On these occasions the remainder of the accused batches of catgut have been returned to the makers and tested by them—the tensile strength of this catgut has invariably been found to be considerably in excess of *B.P.* requirements, and I have been able to confirm this high tensile strength; it has been impossible to cause breakages except by ill-usage.

It is perhaps not always realized how easy it is to treat catgut unfairly in the operating theatre. It may be weakened by immersion in watery solutions before use by the surgeon. Faulty tying of knots tends to cause fraying at any acutely kinked point with consequent increased risk of breakage. A most important factor would appear to be the ease with which, unwittingly, a pull is exerted on catgut many times in excess of the pull to which the gut is tested to fulfil minimum *B.P.* requirements, and, of course, equally many times in excess of the minimum pull needed to occlude a bleeding vessel or to tie a secure knot.

Complaints of faulty material, with their associated implications, can be very distressing to the manufacturers, whose catgut is subjected to rigid tests at all stages of its manufacture. It is unfortunate that such complaints appear in so many cases to be insufficiently well founded, particularly as the manufacturers are precluded by their position from adequate defence in reply.—I am, etc.,

Birmingham, 30. H. G. V. MENCE.

Herpes Zoster and Chicken-pox

SIR,—I was interested to read the letter of Dr. C. Spencer Whitehouse (*Journal,* May 8, p. 1097). When I was a student in the out-patient clinic of Dr. John Franklin at the Westminster Hospital I was fortunate to see a similar case of the simultaneous eruption of herpes zoster and chicken-pox. The patient was a man who had had girdle pains originating in the lumbar region, followed by a widespread vesicular eruption on face, limbs, and trunk. In the left loin the vesicles were almost confluent and were arranged in a broad stripe extending round on to the anterior abdominal wall. Elsewhere the lesions were identical with the rash of chicken-pox.

This patient was also suffering from monocytic leukaemia, for which he was attending another department of the hospital. I remember the observation being made at the time that an association has been described between leukaemia and this uncommon manifestation of herpes zoster —I am, etc.,

London, E.8. JOAN M. CURTIS.

Obituary

F. L. HOPWOOD, D.Sc.

Dr. N. S. FINZI writes: While endorsing every word that Professor A. Wormall has said about Frank Hopwood (*Journal*, May 15, p. 1157) it might not come amiss to add a few personal reminiscences of my dear friend. Soon after the beginning of the first world war he joined us in the *x*-ray department at Bart's as a clinical assistant, probably the first who was neither a medical student nor a medical man. In this way he acquired a practical knowledge of the difficulties of a radiologist that enabled him to realize our problems more than any other physicist of the time. The early workers in *x* rays had to pick up their knowledge of radiological physics mainly from books, and it was extraordinarily helpful to myself to have his lucid explanations of difficult problems. After that war he helped me much, on my taking charge of the *x*-ray department, in designing a considerable extension of it and subsequently as it grew and grew. Very soon after I was appointed in charge of the *x*-ray department I got the medical council of Bart's to appoint him physicist to the *x*-ray department, probably the first appointment of this nature in Great Britain. In 1921 and on several later occasions groups of us visited various different clinics abroad, always, I think, with Hopwood accompanying us, and some of these visits had a considerable influence on our work. On one of them we were joined by Stanford Cade, and it had decisive influence on his subsequent work with radium.

Hopwood's help in starting high-voltage *x*-ray work culminated first of all in our million-volt machine, and now in the linear accelerator of 15 million volts, the construction of which is nearing completion. He was a member of the British delegation at several of the international radiological congresses. One small bit of research work miscarried, although it was the method subsequently used. A jewel merchant was worried about detecting cultured from natural pearls, and Hopwood could have obtained money for the *x*-ray department if he could have discovered the method. He tried various things but relied most on *x*-ray diffraction. However, there was no difference in the two pearls supplied, and yet this was the method subsequently used. I have always thought that there was a mistake in the pearls.

In all our long friendship I have never known him in a temper or ever speak a cross word. I valued his friendship more than I can tell.

Dr. T. D. LLEWELLYN, for many years medical officer of health for the borough of Port Talbot, died suddenly on March 29 at Bridgend, where he had been living in retirement. He was 66 years of age. Tudor David Llewellyn was born at Ogmore Vale, Glamorganshire, on May 5, 1887, the son of a chemist, and from Christ College, Brecon, he entered the Cardiff medical school, completing his training at St. Thomas's Hospital, London, and qualifying M.R.C.S., L.R.C.P. in 1918. Three years later he took the D.P.H. of the University of Wales. After qualification he was assistant to Dr. A. W. Anderson at Ogmore Vale for a short time until, in 1919, he was appointed an assistant school medical officer under the Glamorgan County Council. Later, he was medical officer of health for Pontardawe until 1927, when he took up a similar appointment at Port Talbot. He retired in 1945 on account of ill-health. In addition to the duties of his public health appointments, Dr. Llewellyn took an active interest in the work of the Order of St. John of Jerusalem as a lecturer and as an examiner for twenty-five years. He was exceedingly conscientious in all he did and never spared himself, and his death has brought great grief to his colleagues and to a host of friends. For recreation, he enjoyed a round of golf, and he had the national love of music. He was a member of the Honourable Society of Cymmrodorion and of the Cambrian Archaeological Society, membership of the latter indicating another of his outside interests. He leaves a widow and one daughter.

The sudden death on May 14 of Dr. A. M. D'COTTA at the age of 50 came as a great shock to all his friends and colleagues in Singapore. Adrian Milnes D'Cotta, who was born at Singapore on August 17, 1903, had a brilliant career at the King Edward VII College of Medicine in that city. After qualifying in 1926 he held the appointment of house-surgeon at the College until 1928, when he came to Britain for postgraduate study, taking the Scottish triple qualification in that year and the conjoint diplomas of the English Royal Colleges in the following year. He returned to Singapore in 1930 and became first assistant in the obstetrics and gynaecology department of the King Edward VII College of Medicine, holding a resident post at the Kandang Kerbau maternity hospital, where he rendered good service. He gave up the appointment in 1935 to enter general practice and consequently was one of the first general practitioners in Singapore to possess a sound knowledge of the principles and practice of obstetrics. In 1946 he obtained the D.C.H. of the English Royal Colleges. B. H. S. writes: Few men have ever held the position of high esteem which was Dr. A. M. D'Cotta's these many years, and all of us felt towards "Mills," as he was generally known among his close colleagues and friends, the same respect and admiration in which he was held throughout the medical profession. It was my privilege to know "Mills" through the years from his student days in 1923. He combined with his personal charm and unlimited energy the highest standards of professional ethics. His genial personality, generous instincts, and keen clinical acumen will be missed not only by his colleagues in the profession but by the whole staff of the Catholic Medical Guild, of which he was president at the time of his death. We find a measure of consolation in the fact that he lived a fine, full life, a life enriched by the knowledge that he had the friendship and respect of all who knew him.

The sudden death on May 24 at the early age of 39 of Dr. H. JEFFERSON, consultant anaesthetist to the Belfast City Hospital, came as a profound shock to his many friends. Harold Jefferson was born in 1914 and was educated at Belfast Royal Academy and at Queen's University, Belfast, where he graduated M.B., B.Ch. in 1940. After graduation he held the post of resident medical officer at the Royal Victoria Hospital, Belfast, and then was commissioned in the R.A.F.V.R. early in 1941. Soon afterwards he went overseas, with the rank of flight lieutenant, but already ill-health had begun to dog his footsteps, and in April, 1945, he was flown back from India. J. F. B. writes: When "Jeff," as he was affectionately known, came back to this country he was invalided out of the R.A.F. and underwent a very serious operation. This did not daunt his natural enthusiasm, however, and very soon he was back at work. He began to specialize in anaesthetics, taking the D.A. of the English Royal Colleges in 1947. Early in the following year he was appointed visiting anaesthetist to the Belfast City Hospital and quickly established himself as one of the leading young specialists in the province. His popularity with his colleagues was a just tribute to the excellence of his work. His never-failing good humour and genial manner were well known in many Belfast hospitals, while his tact and courtesy, especially with the junior staff, will long be remembered. In May last year he suffered another serious reverse in health and was off work for some three months. He came back to practise with all his usual verve and energy. Perhaps better than anyone he realized how serious his illness had been; to those of us meeting him frequently in the past nine months it was at times difficult to appreciate how precarious his health was. As recently as January this year he was awarded the Fellowship of the Faculty of Anaesthetists. He was at work on May 23 but collapsed later that day and died the following

morning. His passing is a tragic loss to the profession in Belfast, and he is mourned by all his colleagues, but more particularly by those of us who were privileged to know him as a friend. R. G. V. writes: While convalescent after a severe illness, which developed when stationed in India during the war, Dr. Jefferson took up the study and practice of anaesthetics and quickly became a skilful practitioner in this specialty and was a much-loved figure in the hospital world in Belfast. "Jeff" was possessed of an inimitable sense of humour and comradeship, and many an operating session or surgical emergency ran the smoother for his mere presence in the theatre, to say nothing of his completely unruffled calmness and sure technique. A host of friends in all walks of life delighted in his charm and wit and marvelled at his surpassing courage in the face of serious illness. At the time of his death he was consultant anaesthetist to the Belfast City Hospital, where his gallant and debonair figure will ever be sadly missed by all his colleagues and associates. Deep sympathy will be felt for his widow and three children in their great and untimely loss.

Dr. HENRY ADAMS, who died on May 26 at his home at Bournemouth, where he had been living in retirement, was formerly in practice for many years at North Shields, where he was held in high esteem by all his colleagues. He was 80 years of age. Born on December 3, 1873, Henry Adams was educated at Gordon's College, Aberdeen, and at Aberdeen University, where he took a degree in arts in 1894, graduating in medicine four years later. He then held the appointment of house-surgeon at Aberdeen Royal Infirmary. In 1901 he settled in practice at North Shields, where he remained until 1943, except during the first world war. He then served as a captain in the R.A.M.C. from 1915 to 1918, first in the Mediterranean theatre of war and later in France, where he was a surgical specialist with a casualty clearing station attached to the 59th Division. After demobilization he returned to North Shields, and from 1918 to 1928 was a member of the honorary surgical staff of the Tynemouth Jubilee Infirmary. On his retirement he was elected a life governor of the Infirmary. During the last war, in addition to conducting a busy general practice, he served on medical boards and as medical officer at a first-aid post at Preston Hospital, North Shields, during the air raids. These additional duties, however, served to undermine his strength, with the result that in 1943, at the age of 69, he was forced to retire from practice. Five years later he moved to Bournemouth, but never really recovered his normal health. A member of the British Medical Association for fifty-five years, Dr. Adams was chairman of the Tyneside Division from 1927 to 1936. For many years he was also chairman of the Tynemouth local medical committee and vice-chairman of the Tynemouth local insurance committee. He was a past president of the Newcastle-upon-Tyne and Northern Counties Medical Society. Throughout the forty-two years he worked on Tyneside Dr. Adams gave of his best to his patients. His attention to their needs, provided as it was conscientiously and without stint, earned him their high regard and trust. His colleagues in the medical profession, too, had complete faith in his integrity, a faith they clearly demonstrated by repeatedly re-electing him to the chairs of the local Division and medical committee.

Lieutenant-Colonel H. G. ALEXANDER, I.M.S. (ret.), writes: As late medical superintendent of Mount Vernon Hospital, Northwood, might I be permitted to pay my tribute of great admiration and affection to the memory of one of the most courageous and gallant gentlemen that I have been privileged to know, my friend the late Mr. W. E. SPRINGFORD, whose obituary was printed in the *Journal* of May 29 (p. 1270)? In the face of two of the greatest disabilities to which humans are subjected this gallant gentleman met life and his great responsibilities as a surgeon with the utmost fortitude and resolution. He was a brilliant surgeon who in his short life lived up to the highest traditions of British surgery, and his high ideals remain an inspiration to all of us who knew, loved, and respected him. He was full of human kindness, humour, and great courage, and his memory will ever remain dear to all of us at Mount Vernon. We extend our deepest sympathy to his widow.

Medico-Legal

THIOUREA ON ORANGES

Six Spanish oranges bought during April at a shop in Nottinghamshire and found to contain thiourea as a preservative were the subject of a hearing at Newark County Magistrates Court on June 2. A firm of wholesale fruit importers were charged under the Food and Drugs Act. They pleaded not guilty. It was the second case of its kind, the first, in Derbyshire, having been dismissed.

The prosecution explained that the only preservative allowed in oranges was sulphur dioxide. Thiourea was a toxic substance used by the medical profession for the treatment of abnormality of the thyroid gland. It was first used as a preservative in America in 1946, but experiments showed that in small concentration the substance was lethal to small animals such as rats, and the public health authorities in America prohibited its use. Thiourea was a poison, but it was because of its use as a preservative that this case was brought.

Mr. Hugh Childs, a public analyst, said that although thiourea had dangerous properties he did not think the amount used for preserving oranges would have any effect on normal human beings.

The manager and secretary of the defendant firm claimed that they had acted as brokers for a Spanish firm. They had no reason to suspect that the oranges contained the preservative. There was no danger of a repetition of this offence, because the Spanish Government had now prohibited the use of thiourea.

The magistrate found the case proved. A fine of £5 was imposed and defendants were ordered to pay £10 towards costs.

Universities and Colleges

UNIVERSITY OF OXFORD

On April 29 the degree of B.M. was conferred on D. R. Wright, M. P. Wright, and E. S. N. Hazel.

The Board of the Faculty of Medicine has re-coopted Dr. A. H. T. Robb-Smith for the statutory period of two years from the first day of Trinity Term, 1954.

Dr. Janet M. Vaughan, Principal of Somerville College, has been reappointed as a delegate of the University Museum for three years from the first day of Michaelmas Term, 1954.

UNIVERSITY OF CAMBRIDGE

On May 1 Professor H. R. Dean, Master of Trinity Hall, was appointed a manager of the Benn W. Levy Fund until December 31, 1957.

The following medical degrees were conferred on May 1:

M.D.—E. K. Westlake.
M.B., B.CHIR.—*P. O. Jones.
M.B.—*J. C. Newell Price, R. J. Blow, J. P. Dickson, Betty Holt, Evelyn J. Mitchell.

The following degrees were conferred on May 15:

M.D.—P. A. Emerson, D. V. Bates, R. J. R. Cureton, A. P. Waterson.
M.CHIR.—J. S. W. Whitehead.
M.B.—D. G. Dingle.

*By proxy.

UNIVERSITY OF LONDON

On March 24 the degree of M.D. (Internal) was awarded by the Senate to B. W. Lacey.

The following candidates at the London School of Hygiene and Tropical Medicine have been approved at the examination indicated:

ACADEMIC POSTGRADUATE CERTIFICATE IN PUBLIC HEALTH.—N. J. Al-Chokhachi, M. A. Hamdi, G. H. K. Niazi, A. M. Nur, I. Suliman, Gladys M. Vanniasingham.

The following scholarships at the Royal Free Hospital School of Medicine have been awarded for 1954–5: *A. M. Bird Entrance Scholarship*, Miss M. Wharf (Chesterfield St. Helena School). *Sir Owen Roberts Memorial Scholarship for Women*, Miss S. M. V. Jeffery (Royal Free Hospital School of Medicine). *Elizabeth Garrett Anderson Scholarship for Women*, Miss V. J. Everett (Royal Free Hospital School of Medicine). *Elizabeth Bolton Scholarship*, Miss M. R. Chaplin (Royal Free Hospital School of Medicine). *Florence Hughes Scholarship for Women*, Miss N. Bogdan (Royal Free Hospital School of Medicine).

The degree of M.D. was awarded to S. G. Browne and E. C. Turton on April 6.

The following candidates at the Institute of Psychiatry have been approved at the examinations indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*Part I*: R. W. A. C. Barton, P. H. Connell, P. S. Cook, R. de Alarcon, R. Emery, P. Haden, S. N. R. Pestonjee, B. A. Samaraweera, T. A. C. Siriwardena, A. Sittampalam, A. C. R. Skynner, Nancy I. Swift, J. D. Waldman, J. S. Whiteley, J. K. Wing.

UNIVERSITY OF BIRMINGHAM

At the annual meeting of the Court of Governors of the University held on February 18, the title of emeritus professor was conferred on Humphrey F. Humphreys, Vice-Chancellor of the University in 1952–3, and Professor of Dental Surgery from 1935 to 1952. At a reception in his honour on February 8, Professor Humphreys was presented with a portrait of himself, painted by Waldron Wells.

The title of honorary part-time lecturer in the Department of Experimental Pathology has been given to Dr. W. Weiner, director of the Regional Blood Transfusion Service, and that of University Research Fellow to Dr. Sylvia M. Saddington during the tenure of her present post in the same department.

The following appointments are announced: Dr. F. P. Lisowski, Lecturer in Anatomy; Dr. H. E. Robson, Lecturer in Anatomy; and Mr. A. Gourevitch, Clinical Lecturer in Surgery, as part-time Lecturer in Surgery, in place of Mr. Fauset Welsh, who has resigned.

Professor S. Zuckerman, F.R.S., and Professor T. McKeown will represent the University at the World Population Conference to be held in Rome in September, 1954.

Representatives of the University have been appointed as follows: Professor McKeown on the United Kingdom Committee for World Health Organization of the United Nations; Professor C. F. V. Smout on the Birmingham Regional Medical Recruitment Committee; Professor W. Melville Arnott, Professor E. Brodie C. Hughes, and Emeritus Professor W. H. Wynn on the Standing Joint Committee of the University, the United Birmingham Hospitals, and the Birmingham Regional Hospital Board; Dr. C. G. Parsons on the Regional Advisory Committee on Infectious Diseases; Professor J. W. Orr and Professor J. R. Squire on the Regional Advisory Committee on Pathological Services. Dr. J. W. T. Patterson has been reappointed representative of the University on the governing body of Queen Elizabeth's Grammar School, Hartlebury.

Dr. Margaret Jefferson resigns her appointment as part-time Lecturer in Medical Statistics on July 31, 1954.

UNIVERSITY OF SHEFFIELD

Dr. Joseph Magri has been appointed full-time demonstrator in anatomy.

The following resignations are announced: Dr. R. Wheeler Haines, senior lecturer in anatomy, on his appointment to the Chair of Anatomy in the Royal College of Medicine, Bagdad; and Dr. J. L. A. Grout, honorary lecturer in radiology.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly comitia of the College held on April 29, with the President, Sir Russell Brain, in the chair, Dr. E. R. Boland, Dr. T. C. Hunt, and Dr. J. B. Harman were reappointed representatives of the College on the Central Medical Recruitment Committee, and Sir Alun Rowlands on the Central Council for District Nursing. Sir Charles Dodds was appointed the College representative on the National Committee on Cancer.

The following, having satisfied the Censor's Board, were elected Members of the College:

K. D. Bagshawe, M.B., Katharine M. Baker, M.B., F. H. Burns, M.B., S. I. Cohen, M.D., J. Colvin, M.B., P. B. Cook, M.B., J. J. Daly, M.B., Lieutenant, R.A.M.C., J. R. Edsall, M.B., I. E. Evans, M.B., Yvette A. P. Franklin, M.B., R. G. Gibbs, M.B., A. J. Goble, M.D., J. D. S. Hammond, M.B., P. J. D. Heaf, M.D., Cherry D. Heath, M.D., J. B. Hickie, M.B., Alison Hunter, M.B., J. D. Hunter, M.B., J. Knox, M.B., P. J. Lawther, M.B., D. G Le Roux, M.B., D. Y. Mackenzie, M.D., J. McE. Neilson, M.B., Patience Proby, B.M., A. J. Proust, M.B., P. M. Rooze, L.R.C.P., J. F. Soothill, M.B., M. D. Turner, M.B., H. E. Webb, B.M., E. Wilkes, M.B., M. M. Zion, M.B.

Licences to practise were conferred upon 129 candidates (including 36 women) who have passed the final examination in medicine, surgery, and midwifery of the Conjoint Board, and who have complied with the by-laws of the College, as follows:

S. L. Adesuyi, L. N. Allen, T. D. Annear, Diana Austin, Jacqueline E. Banbury, L. Barsey, D. G. Bennett, A. Berry, H. R. Bissoon Dath, A. S. Blake, Gwyneth, J. D. Botherway, Angela I. Brooks, Jean Brown, D. C. L'E. Burges, Patricia Burne, P. M. C. Camm, Jean Carberry, June M. Cheetham, Brenda A. P. Clark, R. M. Clark, D. Constad, I. J. Cope, I. C. Cree, M. R. Crompton, R. N. Davis, B. Dawson, Jean E. Drake, P. Dromgoole, D. P. Duffield, Lise L. Einerl, R. A. Ellis, P. A. S. Evans, C. D. Farrier, A. S. E. Fowle, J. K. Frost, P. Garmon-Jones, Grace M. Gee, Mary H. Godwin, P. Gortvai, R. A. Grande, Brenda Grant, W. B. Hanley, L. Harbin, L. M. Hart, D. Hide, G. M. R. Holliday, P. E. Hoogewerf, A. B. Hugo, L. H. Hurrell, W. M. Huse, I. Ingleby, Barbara M. Isles, D. C. Jackson, P. D. C. Jarman, P. Jenkins, A. R. Jones, Erica J. Jones, F. W. Jones, H. D. Jones, J. A. Kay, P. Kellett, C. E. Langham, Diana E. Lathbury, N. A. G. Leadbeater, J. E. Leaney, J. J. Lewis, D. C. Linahan, Patricia J. Lindop, B. A. Lowe, C. Lowson, J. A. McMillan, W. M. Mee, Margaret S. Meyer, H. N. Middleton, K. F. Mole, A. A. D. Moore, Janet E. Morgan, O. Morton, Patricia E. Moul, Sheila M. Mullally, D. D. Munro, T. W. Nicholson, Wendy E. Noble, Patricia Painter, M. S. K. Palmer, A. Pearce, K. I. Pearce, Valerie J. Perkins, J. M. Phillips, C. W. Pook, D. Pownall, J. A. Purcell, J. R. Rawstron, Dorothy S. Read, Kathleen M. Reid, J. E. S. Relton, Corinne J. Richardson, D. F. Rideout, G. D. Ripley, D. Roberts, Margaret Russell, J. G. Sanderson, Count Andrew C. Skarbek, J. C. Smith, R. W. Smith, D. L. Smithson, B. K. Sood, G. P. St. C. Starck, L. Stimmler, Jane Sweatman, Eileen N. Thompson, T. M. Tibbetts, W. R. Tidy, E. E. D. Tomlin, Annie M. N. Tustin, Heather F. A. Vickery, D. Vuckovic, J. G. Wall, D. R. Whitehouse, D. H. Williams, H. R. Willings, J. H. P. Willis, A. J. Winterton, Joan M. Woodley, Celia B. M. Wookey, Enid M. Wozencroft, R. T. Yip-Choy, C. F. A. Younger, A. Youatt.

Diplomas were conferred, jointly with the Royal College of Surgeons of England, as follows:

DIPLOMA IN ANAESTHETICS.—A. J. Sims.

DIPLOMA IN CHILD HEALTH.—Susanne M. Salvisberg, and to the other successful candidates whose names are printed in the report of the meeting of the Royal College of Surgeons of England on April 8 (see below).

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—R. M. Ajina, Evelyn C Cummings, J. S. Dodge, N. D. Gosavi, A. E. Gunders, V. G. Nivsarker, Hla Kyaw Pe; C. E. P. Samarasinghe, S. Sen Gupta, T. K. Sweeney, S. A. Talib, and to the other successful candidates whose names are printed in the report of the meeting of the Royal College of Surgeons of England on April 8 (see below).

Diplomas in Physical Medicine and in Ophthalmology were also conferred, jointly with the Royal College of Surgeons of England, on the successful candidates whose names are printed in the report of the meeting of the Royal College of Surgeons of England on April 8 (see below).

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College, held on March 11, with Sir Cecil Wakeley, President, in the chair, it was reported that Mr. J. Johnston Abraham had been elected a Hunterian Trustee. A Hunterian Lectureship was awarded to Dr. Howard C. Naffziger (San Francisco).

Mr. R. R. Simpson (Hull) was elected to the Fellowship *ad eundem*.

J. E. Gardiner, Ph.D. (Leeds), was appointed Junior Lecturer in the Department of Pharmacology.

Dr. I. K. R. McMillan (St. Thomas's) was reappointed Mackenzie Mackinnon Research Fellow for the year ending June 30, 1955. The Hallett Prize was presented to A. Mitra (Calcutta). The Handcock Prize was presented to Sheila C. Hay (Sheffield) and Margaret S. Meyer (Royal Free).

The Council of the College met on April 8 for the last time in the old council room of the College, in which for over a hundred years their predecessors had held their meetings. The next meeting will be held in the new room in the rebuilt College.

The death of Sir Frank Colyer (Honorary Curator of the Odontological Collection and Hunterian Trustee) was reported and the Council unanimously adopted a resolution of condolence.

The Honorary Fellowship of the College was conferred on Dr. G. Gavin Miller, of Montreal.

The following were elected Fellows of the College without examination as being medical practitioners of at least 20 years' standing: Mr. J. W. H. Grice (Tunbridge Wells), Mr. D. M. E. Thomas (Sully, Glam), Professor G. Hadfield (London), Mr. J. Trueta (Oxford), Mrs. Dorothy R. Campbell (Coventry).

Mr. W. A. Jackman (Bristol) was elected to the Fellowship *ad eundem*, and Mr. R. R. Simpson (Hull) was admitted to the Fellowship *ad eundem*.

Dr. W. D. M. Paton (University College Hospital Medical School) was admitted as the first Professor of Pharmacology at the College.

The Jacksonian Prize for 1953 was awarded to Mr. J. H. Peacock (Bristol) for his essay on the pathology and surgery of peripheral vascular occlusion.

The first Mitchiner Medal was awarded to Brevet Colonel H. D. Chalke, and the first Lady Cade Medal to Squadron Leader R. R. L. Pryer. Professor Martin A. Rushton (Guy's) was awarded the John Tomes Prize.

A Hunterian Lectureship was awarded to Professor Milroy A. Paul (Ceylon).

The Council selected diaphragmatic hernia as the subject for the Jacksonian Prize for 1955.

It was decided to institute a badge of office to be affixed to the Fellow's gown to distinguish the Members of Council.

Diplomas in Child Health, in Physical Medicine, in Ophthalmology, and in Tropical Medicine and Hygiene were granted, jointly with the Royal College of Physicians of London, as follows:

DIPLOMA IN CHILD HEALTH.—Dierdre Airey, Enid Atkins, H. Aufrichtig, Doris M. Beaton, Elaine M. Belton, Elizabeth F. Bennett, J. R. Bhatia, Flora M. Bisset-Smith, Audrey M. Bolton, E. M. Broadfoot, J. A. Browne, D. W. Bull, June M. Burger, A. P. Camilleri, Kai Hang Chau, J. A. Cheese, Omana A. Cheriyan, E. Chigier, J. H. Clyde, G. J. Cousins, Mary Crawford, Joan M. St. V. Dawkins, S. R. Deenadayalu, J. M. Doyle, Catherine M. Durkin, J. G. Edgar, C. P. E. Elliott-Binns, J. W. Fisk, D. M. Fraser, S. P. Ghosal, Sheila M. Gough, Margaret L. Gladstone, Isobel H. Grant, S. T. Gunewardene, Anne M. Haines, Margaret E. Hall, Mary Hallowell, M. J. T. Hewetson, Sai Kong Ho, Kathleen A. Hockey, K. S. Holt, Megan D. M. Johnson, Jocelyn Johnston, P. Kapur, Pathmaranie Kathiravelu, R. E. Kottler, Sylvia Lath, J. B. Lewis, M. Lewis, Siew Whye Loh, G. C. Love, Margaret Luing, M. F. McDowall, T. McKendrick, Sheila L. McKinlay, S. S. Manchanda, Cicely J. Millbank, Rhona E. Morgan, Marion E. Morris, Marion B. Morton, Chitra Mukherjee, B. K. A. Muller, N. V. O'Donohoe, R. M. Oliver, Ida S. Paranjoti, Hawa Patel, G. N. St. J. Penney, Jean Poole, Frances E. Powell, Edith I. Proctor, S. D. Roche, Sonia Rollin, Carol J. Rubidge, H. H. Shawdon, Isabel G. Smith, M. H. Southall, Joyce K. Starkie, Joan V. Stavert, K. Stewart, Mary Sugden, Majuree Sundaravej, C. G. W. Sykes, I. G. Thomson, J. N. Ure, D. Vardy, Claudine M. R. Vesey, I. S. Wallman, Ruth M. Walters, M. A. Warley, S. M. Don, G. R. Wijegunartne, P. S. W. Wilkins.

DIPLOMA IN PHYSICAL MEDICINE.—D. J. E. Cheshire, P. R. Travers.

DIPLOMA IN OPHTHALMOLOGY.—J. A. Akingbehin, M. R. Ashbridge, M. H. Ashruff, D. J. Bowerman, G. Davidson, M. S. Faridi, K. C. Garg, H. Hardy, B. A. E. Harley, S. U. Joshi, A. bin A. Kadir, R. C. K. Loh, Marguerite C. Macdonald, Laurel J. Macintosh, M. H. Malik, D. L. E. Paine, R. A. Quesada-Guardia, J. N. Rohatgi, S. Roy, G. S. Sandhu, G. Singh, K. S. Subramaniam, A. A. Tye, J. H. W. Wessels.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—J. C. Aickin, F. L. Ashworth, A. S. Beare, C. Bhamarasuta, N. K. Bharucha, Z. M. A. Cader, A. T. Cook, T. M. Desai, J. K. Gajjar, G. H. K. Gentle, J. E. J. Hurman, S. Jatinandana, A. C. Kail, A. M. Khatib, Y. J. Kiladjian, A. G. Leishman, W. S. Millar, H. R. Miller, K. P. Milne, A. Muir, I. G. Murray, L. Noronha, Magdelen K. E. Oberhoffer, M. K. Panikkar, K. H. Patel, H. N. Ray, W. Rollinghoff, P. D. Scheffel, E. K. Tagboto, P. Yates, P. Yogarnathan.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a meeting of the Council of the College held on March 27, with the President, Mr. Arthur A. Gemmell, in the chair, Edward Solomons was admitted to the Fellowship.

At a meeting of the Council of the College held on May 22, with the President, Mr. Arthur A. Gemmell, in the chair, the following were admitted to the Fellowship:

H. Agar, A. F. Anderson, A. J. S. L. Boyd, J. C. McC. Browne, J. A. Chalmers, Mary P. John, W. Kearney, O. Lloyd, D. J. Malan, Patricia J. H. Massey, G. P. Milne, R. B. K. Rickford, C. S. Russell, J. M. Scott, Ruby G. Sharp, A. M. Sutherland.

The following were admitted to the Membership:

G. T. D. Barr, E. R. Broadberry, Vivienne A. Croxford, H. F. Daghistany, P. J. Dwyer, A. L. T. Easton, J. R. Elliott, D. W. S. Gordon, T. P. Grant, J. Greenwell, K. Greig, R. W. Hughes, G. A. Humphreys, F. D. C. Jackson, K. B. Layton, C. V. Love, A. C. McInnis, P. Manolis, M. Mukerji, F. A. Murray, R. F. O'Donoghue, G. D. Pinker, D. E. Savage, S. G. Singh, H. J. Tighe, J. R. D. Tomlinson, A. C. Turnbull, R. Vaish, P. S. Watson, V. T. White.

The Council received a further grant of £3,000 from the Leverhulme Trust Fund for research purposes.

CONJOINT BOARD OF IRELAND

The following candidates were duly admitted Licentiates in Medicine and Midwifery on April 2, having passed the final examination in medicine, surgery, and midwifery of the Conjoint Board of Ireland: Una E. Batt, A. I. Booth, S. A. A. Carson, D. R. Chinoy, Margaret T. Coyle, Laura Cullen, Veronica O. Egbuna, Bridget Finnegan, Patricia J. Finnegan, P. D. N. MacAllister, Grainne McCarthy, P. J. Ward.

The Services

Major-General J. M. Macfie, C.B., C.B.E., M.C., late R.A.M.C., has been appointed Honorary Colonel of a Territorial Army unit.

Captain A. M. Ferrie, R.A.M.C., has been mentioned in dispatches in recognition of gallant and distinguished services whilst a prisoner of war in Korea.

Flight Lieutenant R. R. Macdonald, R.A.F., has been mentioned in dispatches in recognition of gallant and distinguished service in Malaya.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending May 22 (No. 20) and corresponding week 1953.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1954					1953				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	22	0	4	0	0	19	2	5	1	2
Dysentery	1,104	144	324	6	4	754	123	93	2	2
Encephalitis, acute	5	1	0	0	0	7	0	0	0	
Enteric fever:										
Typhoid	3	0	0	0	0	3	0	0	1	
Paratyphoid	4	0	2	0	0	4	0	0	0	
Food-poisoning	195	20		0		155	15		5	
Infective enteritis or diarrhoea under 2 years				16	15				15	25
Measles*	1,940	61	187	124	329	10,277	345	403	319	331
Meningococcal infection	27	1	10	1	3	31	1	12	1	
Ophthalmia neonatorum	37	3	7	0		46	1	6	0	
Pneumonia†	520	32	180	8	4	505	34	155	9	5
Poliomyelitis, acute:										
Paralytic	17	0	4	2	0	22	1	3		2
Non-paralytic	9	0				7	0			
Puerperal fever§	208	27	14	2		267	30	10	0	
Scarlet fever	832	42	115	41	32	1,306	88	149	44	66
Tuberculosis:										
Respiratory	933	114	155	35				161	41	
Non-respiratory	150	14	33	4				39	10	
Whooping-cough	2,419	104	352	29	25	3,103	213	454	53	145

DEATHS in Great Towns	1954					1953				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	0	0	0	0	0	0	0	0		0
Dysentery	0	0		0		0	0			
Encephalitis, acute		0			0		0			0
Enteric fever	0	0	0	0	0	0	0	0		
Infective enteritis or diarrhoea under 2 years	9	0	1	0	1	4	0	3	3	1
Influenza	16	3	0	0	1	4	0	0	0	2
Measles			0	0	0		0	0		0
Meningococcal infection		0	0				0	0		
Pneumonia	179	21	17	13	4	187	24	14	8	5
Poliomyelitis, acute	0	0				4	0			0
Scarlet fever		0	0	0	0		0	0		0
Tuberculosis:										
Respiratory	83	13	12	2	7	103	12	14	1	6
Non-respiratory			0	1	0		1	0	2	1
Whooping-cough	1	0	0	0	0	2	1	0	0	0
Deaths 0–1 year	223	28	29	9	13	228	26	31	7	16
Deaths (excluding stillbirths)	4,734	653	591	123	155	4,935	711	569	111	172
LIVE BIRTHS	8,243	1290	954	202	427	8,349	1237	948	246	462
STILLBIRTHS	200	28	31			211	15	25		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Vital Statistics

Industrial Accidents and Diseases

The number of workpeople (other than seamen) in the United Kingdom whose deaths from accidents in the course of their employment were reported in April, 1954, was 112, compared with 118 in March and 121 (revised figure) in April, 1953.

The number of cases of industrial diseases in the United Kingdom reported during April was as follows: Lead poisoning 6, other poisoning 0, anthrax 3, epitheliomatous ulceration 7, and chrome ulceration 11; total 27. There were no deaths.—*Ministry of Labour Gazette*, May, 1954.

Week Ending May 29

The notifications of infectious diseases during the week included pneumonia 428, scarlet fever 911, whooping-cough 2,207, diphtheria 13, measles 2,046, dysentery 1,136, acute poliomyelitis 16, paratyphoid fever 2, and typhoid fever 1.

Infectious Diseases

The largest variations in the trends of infectious diseases in England and Wales during the week ending May 22 were increases in the number of notifications of 234 for measles, from 1,706 to 1,940, and 73 for dysentery, from 1,031 to 1,104, and decreases of 241 for whooping-cough, from 2,660 to 2,419, and 66 for scarlet fever, from 898 to 832.

The largest rises in the incidence of measles were 88 in Yorkshire West Riding, from 59 to 147, 48 in Surrey, from 16 to 64, and 41 in Cheshire, from 75 to 116. The largest fluctuation in the trends of whooping-cough was a fall of 51 in Kent, from 188 to 137. Only small variations were reported in the local returns of scarlet fever. 22 cases of diphtheria were notified, being 13 more than in the preceding week. The chief features of the returns of diphtheria were rises from 0 to 4 in Devonshire, 3 to 7 in Lancashire, and 0 to 3 in Glamorganshire. The largest centres of diphtheria were Liverpool C.B. 5 and Plymouth C.B. 4.

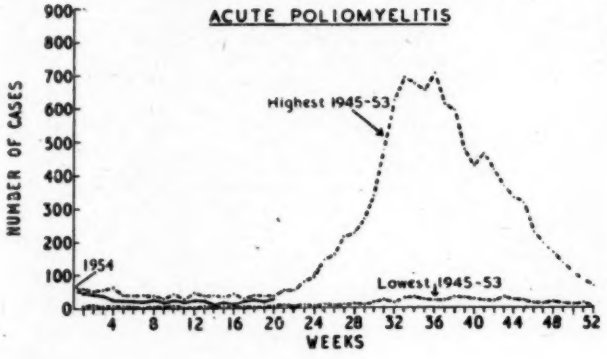
26 cases of acute poliomyelitis were notified. These were 3 more for paralytic and 4 more for non-paralytic cases than in the preceding week. Three cases were notified in the counties of Warwickshire (Birmingham C.B. 3), Lancashire, Yorkshire West Riding, and Durham (Sunderland C.B. 2).

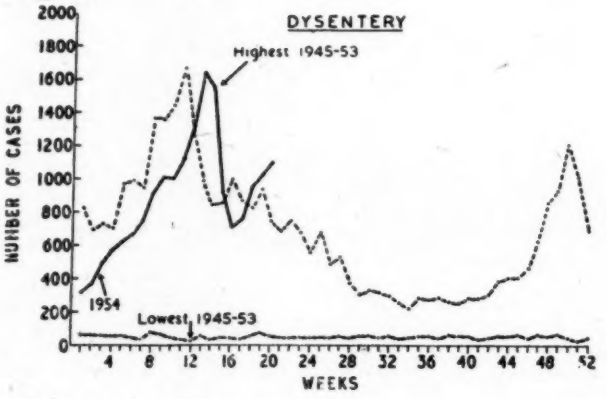
The incidence of dysentery this year has been very high, and the number of notifications has risen for the last four weeks. Notifications rose steadily from 322 in the first week of the year to 1,642 in the thirteenth week, then fell to 711 in the sixteenth week, and have risen steadily since. During the first 20 weeks 17,834 cases of dysentery have been notified. The largest centres of infection during the week reviewed were Lancashire 239 (Irlam U.D. 58, Bolton C.B. 20, St. Helens C.B. 17, Manchester C.B. 15, Stretford M.B. 14, Rawtenstall M.B. 14, Liverpool C.B. 12, Salford C.B. 10, Eccles M.B. 10, Farnworth M.B. 10), Yorkshire West Riding 152 (Dewsbury C.B. 69, Sheffield C.B. 24), London 144 (Islington 49, Lewisham 14), Leicestershire 81 (Leicester C.B. 69), Staffordshire 67 (Newcastle-under-Lyme M.B. 31, Cannock U.D. 22), Middlesex 54 (Tottenham M.B. 18, Willesden M.B. 11), Sussex 43 (Brighton C.B. 29), Cheshire 39 (Dukenfield M.B. 21), Surrey 31 (Croydon C.B. 21), Northumberland 27 (Castle Ward R.D. 14), Warwickshire 27 (Birmingham C.B. 16), Kent 22 (Chatham M.B. 10), Nottinghamshire 22, and Essex 21.

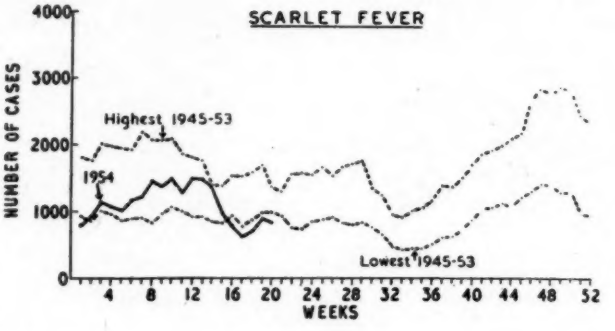
The largest returns of dysentery in Scotland were 205 in Glasgow, 44 in Edinburgh, and 15 in Lanark county.

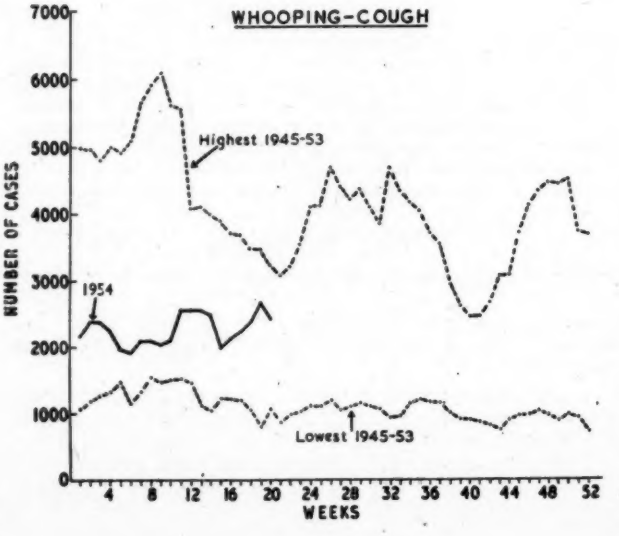
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the nine years 1945–53 are shown thus - - - - - - -, the figures for 1954 thus ————. Except for the curves showing notifications in 1954, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.





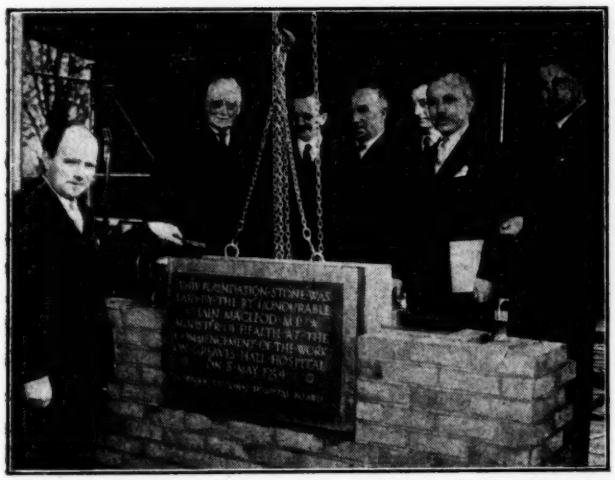




Medical News

Smoke Abatement.—The National Smoke Abatement Society has published, as a printed booklet, a memorandum of proposals for action that it has submitted to the Government committee on air pollution (the Beaver Committee). The Society considers present legislation on the subject outdated, and calls for a new Act. Provisions that the Society would like to see in the new Act include: more stringent control methods for checking the emission of smoke; prior approval of all new fuel-burning installations (except domestic, for which only approved appliances should be sold); power for local authorities to set up smokeless zones without having to promote private Bills; and, to ensure that the law is respected, the employment of qualified smoke inspectors. The memorandum also makes a number of proposals for immediate action. The memorandum is obtainable for 1s. from the Society, at 30, Grosvenor Place, London, S.W.1.

New Mental Deficiency Hospital.—The picture on this page shows the Minister of Health, Mr. IAIN MACLEOD, laying the foundation stone of Greaves Hall, near Southport, last month. Greaves Hall is the first major hospital



to be started in England and Wales since before the war, and it will be used for mental defectives. Its estimated cost is about £3m., and it will provide beds for over 1,000 patients. The new hospital will be in the area of the Liverpool Regional Hospital Board. Speaking at the foundation ceremony, Mr. Macleod said that more than 2,500 new mental-deficiency hospital beds were expected to be built from centrally financed schemes in the next two years in addition to the schemes in the hospital boards' normal programmes. But new building was not the only way in which it was hoped to improve the mental health services. The services provided by local health authorities for mental defectives living at home were of great importance and had increased considerably in the last few years. But, although in recent years nursing recruitment had made great strides, the mental hospitals had lagged behind the general advance and were still very short of nursing staff. It was not yet sufficiently well known that the whole atmosphere of the mental and mental deficiency hospitals had been revolutionized by modern methods of care and treatment and that these branches of the nursing profession now offered a career with interesting work and excellent prospects. Other speakers at the ceremony included Mr. T. KEELING, chairman of the Liverpool Regional Hospital Board, the BISHOP OF LIVERPOOL, Sir HENRY COHEN, and Mr. C. AVELING, chairman of the Southport and District Hospital Management Committee.

Diabetic Association.—Founded in 1934, the Diabetic Association, which is primarily an association of laymen, has contributed greatly to the welfare of the whole diabetic community. Membership is now about 18,000. Among the association's activities are the financing of research from a fund set up about seven years ago, the organizing of summer holiday camps for children, and the giving of detailed advice to diabetics. Great Britain was the first country to form a diabetic association, and its example has now been followed in nearly all other countries. The association asks medical practitioners to call the attention of their diabetic patients to its aims and achievements, full particulars of which may be obtained from the secretary-general at 152, Harley Street, London, W.1.

Florence Nightingale Centenary Concert.—The United Hospitals Festival Choir presented a concert at the Royal Albert Hall on June 3 to commemorate the 100th anniversary of Florence Nightingale's mission to the Crimea. H.R.H. the PRINCESS ROYAL was present to hear Mendelssohn's Symphony and Hymn of Praise pleasingly interpreted by the London Symphony Orchestra (conductor COLIN RATCLIFFE) and the United Hospitals Festival Choir, with soloists ENA MITCHELL, PAULINE BROCKLESS, and ALEXANDER YOUNG. Earlier Dame MYRA HESS and the orchestra had given a performance of Schumann's Piano Concerto in A Minor. The Choir, of about 300 voices, was formed in 1951 by Colin Ratcliffe, and is drawn from the medical, nursing, administrative, and technical staff, and students of over 50 hospitals in and around London, under the Presidency of Lord Horder. Its purpose is to enable hospital staff to help medical and allied causes while contributing to the field of music. The concert at the Albert Hall was in aid of the National Florence Nightingale Memorial Fund. The Fund was launched with the joint objects of maintaining Florence Nightingale House as a residential home for nurses attending postgraduate courses in London, and of promoting nursing education by the award of scholarships.

Travelling Medical Bookshop.—Hospitals far from teaching centres and well-stocked bookshops are now being visited by a travelling medical book service organized by John Wright and Sons' Ltd., of Bristol. A large motor vehicle has been adapted to carry and display a comprehensive range of books, about 1,000 in number, on medical, dental, nursing, and allied subjects. The vehicle will follow an itinerary covering the south-west, south Wales, and the west Midlands, stopping at hospitals for an hour or two so that the staff can have an opportunity to see the latest medical publications.

European Office of W.H.O.—The Executive Board of the World Health Organization has endorsed the choice of Copenhagen as the permanent site for the Regional Office for Europe. Other cities considered were Nice, Frankfurt, The Hague, Vienna, Florence, and three in Switzerland. In the final ballot there were 11 votes in favour of Copenhagen and 10 in favour of Nice.

Study Tours in Europe.—The German Educational Travel Association has arranged four study tours for doctors in connexion with congresses on (1) gynaecology, at Geneva; (2) poliomyelitis, at Rome; (3) orthopaedic surgery, at Berne; (4) tuberculosis, at Madrid. This travel association is a non-profit-making organization. Details from Deutsche Studienreisen-Gesellschaft, Nürnberg, Veillodterstrasse 1.

Consulting Surgeon to the Army.—Sir ARTHUR E. PORRITT has been appointed honorary consulting surgeon to the Army at home in succession to Sir HENEAGE OGILVIE.

Royal Dental Hospital.—Lord WEBB-JOHNSON has been appointed consulting surgeon to the Royal Dental Hospital of London and School of Dental Surgery.

Faculty of Anaesthetists.—Dr. BERNARD JOHNSON has been re-elected dean of the Faculty of Anaesthetists of the Royal College of Surgeons for the ensuing year, and Dr. R. F. WOOLMER has been elected vice-dean.

R.M.B.F.—The annual general meeting of the Royal Medical Benevolent Fund was held on June 4. A report will be given in our next issue.

Queen Charlotte's and Chelsea Hospitals' Research Prizes.—The prizes for 1953 have been awarded to Dr. J. H. GIBSON (£200) for a paper on pyrexia in the puerperium written in conjunction with Dr. R. M. CALMAN, and to Dr. W. E. HUNT (£50) for one on acute oesophagitis in the newborn.

Sheffield Old Students.—The recently formed Sheffield Medical School Old Students Association will hold its inauguration dinner at Sheffield on October 2. Details of this, and of membership, from the secretary of the Pathology Department, The University, Sheffield, 10.

COMING EVENTS

Mackenzie Industrial Health Lecture.—This lecture will take place on July 13, *not* July 19 as stated in our issue of May 29 (p. 1276). The lecture has been arranged by the B.M.A. in conjunction with the Association of Industrial Medical Officers and will be delivered during the latter's annual provincial meeting in Manchester.

Medical Research Society Lecture for 1954.—This lecture will be delivered by Dr. G. W. THORN, of Harvard, at 5.30 p.m. on June 18 at the London School of Hygiene and Tropical Medicine. His subject is "Adrenal Cortical Response to Stress in Man."

Faculty of Radiologists.—The annual meeting will be held in Dublin on June 18 and 19. Further details from the secretary, 45, Lincoln's Inn Fields, London, W.C.2.

British Association of Urological Surgeons.—The annual meeting will be held in Dublin from June 24 to 26. The main discussion will be on "Irradiation Therapy in Urology," and there will also be short papers. Further information may be obtained from the secretary of the association, 45, Lincoln's Inn Fields, London, W.C.2.

International Congress for Individual Psychology.—The congress will be held in Zurich from July 26–29. Further information from Frau Dr. E. Schmid, 14, Krönleinstrasse, Zurich, Switzerland.

International Congress on Thrombosis and Embolism.—A conference will be held at Basle, Switzerland, from July 20 to 24. Further information may be obtained from the general secretary, Gynaecological Clinic of Basle University, Switzerland.

NEW ISSUES

British Journal of Ophthalmology.—The new issue (Vol. 38, No. 6) is now available. The contents include:

FOVEAL VISION IN AMBLYOPIA. Mary Pugh.
VALUE OF ABNORMAL RETINAL CORRESPONDENCE IN BINOCULAR VISION. M. Levinge.
CATARACT SUTURES. W. L. Hughes.
ACRYLIC GONIO-SUBCONJUNCTIVAL PLATES IN GLAUCOMA SURGERY. S. A. Qadeer.
FREE AMINO ACIDS IN THE HUMAN AQUEOUS HUMOUR. C. Wunderly and B. Cagianut.
ACUTE HYPOTONIA. Valdemar Hertz.
INTRA-OCULAR FOREIGN BODIES: REPORT OF 102 CASES. Kazimierz Rubenstein.
EXTRA-CONJUNCTIVAL IMPLANT. M. L. Nairac.
ADENOMA OF THE CONJUNCTIVA. A. J. Boase.
CONGENITAL MEMBRANOUS CATARACT, DENTIGEROUS CYST, AND MULTIPLE FIBROLIPOMATA. L. P. Agarwal and I. N. Raizada.

Issued monthly; annual subscription £4 4s.; single copy 8s. 6d.; obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

Annals of the Rheumatic Diseases.—The new issue (Vol. 13, No. 3) will be available in a week's time. The contents include:

ON THE MECHANISM THROUGH WHICH OBSTRUCTIVE JAUNDICE INFLUENCES INFLAMMATORY PROCESSES. Hans Selye.
ANKYLOSING SPONDYLITIS AND PROLONGED A.C.T.H. THERAPY. H. F. West and G. R. Newns.
STUDIES ON THE EFFECT OF PROBENECID ("BENEMID") IN GOUT. R. M. Mason.
EFFECT OF POST-PARTUM PLASMA IN RHEUMATOID ARTHRITIS. David H. Neustadt, Jacob Geiger, and Otto Steinbrocker.
THE ARTHRITIS OF RHEUMATOID ARTHRITIS. Bruce Cruickshank.
OSTEITIS CONDENSANS ILII AND ITS DIFFERENTIATION FROM ANKYLOSING SPONDYLITIS. Malcolm Thompson.
SHOULDER AFFECTIONS IN RHEUMATOID ARTHRITIS. Veikko A. I. Laine, Kauko J. Vainio, and Kalle Pekanmäki.
REITER'S SYNDROME AND CORTISONE. H. A. Reid.

Issued quarterly; annual subscription £2 2s.; single copy 12s. 6d.; obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Monday, June 14

EDINBURGH UNIVERSITY.—At Physiology Class Room, University New Buildings, 5 p.m., Dr. D. J. Guthrie: The Monros and the Edinburgh Medical School.
INSTITUTE OF NEUROLOGY.—5 p.m., Guest Lecture by Dr. E. H. Botterell (Toronto): Management of Spinal Cord Injuries and Studies on Spinal Man.
●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Chelsea Hospital for Women, (1) 3 p.m., Professor J. Louw (Capetown): Abortions. (2) 4.30 p.m., Professor Bruce Mayes (Sydney): Infertility.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. H. E. Holling: Ballisto-cardiography.

Tuesday, June 15

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. W. N. Goldsmith: Tuberculosis.
●INSTITUTE OF NEUROLOGY.—5.30 p.m., Dr. Helen E. Dimsdale: Intracranial Vascular Anomalies other than Aneurysms.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. A. M. Cooke: On Writing for a Medical Journal.
ROYAL COLLEGE OF PHYSICIANS OF LONDON.—5 p.m., Mitchell Lecture by Dr. J. L. Livingstone: Observations on the Treatment of Pulmonary Tuberculosis at the Present Time.
ROYAL COLLEGE OF SURGEONS OF ENGLAND.—3.45 p.m., Arnott Demonstration by Professor M. F. Lucas Keene: Embryological Background of Some Common Abnormalities.

Wednesday, June 16

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. C. D. Calnan: Ringworm Infections and Their Treatment.
●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Queen Charlotte's Hospital, 12 noon, Professor Bruce Mayes (Sydney): Could the Chapter on Eclampsia Disappear? (The Present-day Management of Toxaemia in Sydney.)
LIVERPOOL MEDICAL INSTITUTION.—At Warrington General Hospital, clinical demonstration arranged with Warrington Division, B.M.A.
MIDDLESEX COUNTY MEDICAL SOCIETY.—At Shenley Hospital, 3 p.m., Film: A Two-year-old Goes to Hospital. To be introduced by Dr. C. H. A. Wedeles, followed by a discussion.
ROYAL EYE HOSPITAL.—5.30 p.m., Mr. G. C. Pritchard: Visual Fields (2).

Thursday, June 17

EDINBURGH UNIVERSITY.—At Physiology Class Room, University New Buildings, 5 p.m., Dr. D. J. Guthrie: Modern Medical Education in Historical Perspective.
INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. H. Haber: Specific Granulomas.
●INSTITUTE OF NEUROLOGY.—5.30 p.m., Dr. W. W. Gooddy: Birth Injuries.
●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Hammersmith Hospital, 3 p.m., Professor Bruce Mayes (Sydney): The Pregnant Diabetic.
LEEDS UNIVERSITY.—At Littlewood Hall, Instructional Block, General Infirmary at Leeds, 4 p.m., First Matthew Stewart Lecture by Professor G. R. Cameron, F.R.S.: The Exploration of the Cell.
LONDON JEWISH HOSPITAL MEDICAL SOCIETY.—At Medical Society of London, 8.30 p.m., annual general meeting. Short papers by general practitioners.
NORTH-WESTERN TUBERCULOSIS SOCIETY.—At Baguley Hospital, Wythenshawe, Manchester, 3 p.m., summer meeting.
ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5 p.m., Hunterian Lecture by Sir Stanford Cade: Adrenalectomy.
ROYAL EYE HOSPITAL.—5.30 p.m., Miss I. Kane: Retrolental Fibroplasia.
ROYAL SOCIETY.—4.30 p.m., Bakerian Lecture by Professor A. R. Todd, F.R.S.: Chemistry of the Nucleotides.
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—7.30 p.m., annual general meeting. Dr. C. C. Chesterman: The Training and Employment of African Auxiliary Medical Personnel.

Friday, June 18

●INSTITUTE OF DERMATOLOGY.—5.30 p.m., clinical demonstration by Dr. R. M. B. Mackenna: Tuberculosis and Sarcoid.
●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Queen Charlotte's Hospital, 2 p.m., Professor J. Louw (Capetown): Rupture of the Uterus.
KENT AND CANTERBURY HOSPITAL.—8 p.m., clinical meeting.
LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—At Royal Free Hospital School of Medicine, 8.30 p.m., social meeting with music.
LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—5.30 p.m., Medical Research Society Lecture by Dr. G. W. Thorn (Harvard): Adrenal Cortical Response to Stress in Man.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Mr. J. E. Laing: General Principles of Plastic Repair. 4 p.m., Dr. D. V. Hubble: Investigation of Endocrine Syndromes.

Saturday, June 19

BIOCHEMICAL SOCIETY.—At Department of Biochemistry, Cambridge University, 11 a.m., 330th meeting. Scientific papers will be read.
●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Chelsea Hospital for Women, 11 a.m., Mr. C. W. A. Kimbell: Subtotal, Total, and Vaginal Hysterectomy.

APPOINTMENTS

BRITISH TRANSPORT COMMISSION (BRITISH RAILWAYS): LONDON MIDLAND REGION.—C. R. May, L.M.S.S.A., and H. H. Whincup, M.B., Ch.B., Assistant Medical Officers.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.—J. B. Lyon, M.B., B.Chir., M.R.C.P., Consultant Dermatologist with charge of Venereal Disease Clinics in Ipswich Hospitals Area; W. J. Crawford, M.B., B.Ch., Anaesthetic Registrar, East Suffolk and Ipswich Hospital; Kathleen M.

McNamara, L.R.C.P.&S.I., Anaesthetic Registrar, Newmarket General Hospital; Lucy T. Lee, M.B., B.Ch., Anaesthetic Registrar, United Norwich Hospitals; Marion B. Morton, M.B., B.S., D.C.H., Paediatric Registrar in Peterborough Area.

HARDING, H. E., F.R.C.S., Orthopaedic Surgeon, Hospital of St. John and St. Elizabeth, London, N.W.

KNAPMAN, W. B., M.R.C.S., L.R.C.P., Assistant Psychiatrist, Bowden House, Harrow-on-the-Hill.

JAMIESON, JOHN G., B.M., B.Ch., D.C.H., Senior School Medical Officer, Leeds.

MACTAGGART, DOUGLAS K., M.B., Ch.B., D.P.H., Assistant County Medical Officer, Devon County Council, and Medical Officer of Health to the Borough of Dartmouth, the Urban Districts of Brixham and Paignton, and Brixham Port Health Authority.

MANCHESTER REGIONAL HOSPITAL BOARD.—A. Glass, M.B., Ch.B., F.R.C.S., Consultant Orthopaedic and Accident Surgeon to North Manchester Hospital Centre and Booth Hall Children's Hospital. J. D. Heppleston, M.B., Ch.B., D.C.P., Consultant Group Pathologist to South Cheshire Hospitals.

MENZIES, ALEXANDER, M.B., Ch.B., D.P.H., Medical Superintendent, Inverness Group of Hospitals.

MILLIGAN, H. C., M.B., Ch.B., D.P.H., Deputy Medical Officer of Health, Walsall County Borough.

NEWMAN, NOEL, M.B., B.Ch., D.P.H., Deputy Medical Officer of Health and Deputy Principal School Medical Officer, City of Bath.

NORTH-EAST METROPOLITAN REGIONAL HOSPITAL BOARD.—J. B. Enticknap, M.D., D.C.P., Full-time Consultant Pathologist, East Ham Memorial Hospital. H. W. Balme, M.D., M.R.C.P., full or maximum Part-time Consultant Physician, Whipps Cross Hospital. A. Russell, M.D., M.R.C.P. D.P.H., D.C.H., Part-time Consultant Paediatrician, Harold Wood Hospital, Ilford Maternity Hospital, Ilford Public Health Offices Clinic. R. N. G. Atherstone, M.B., B.Chir., D.A., F.F.A. R.C.S., Part-time Consultant Anaesthetist, King George Hospital, Ilford, Ilford Isolation Hospital G. C. Thick, M.B., B.S., D.A., F.F.A. R.C.S., Part-time Consultant Anaesthetist, Hertford Group of Hospitals.

PRESTON, FRANK S., M.B., Ch.B., D.A., Regional Medical Officer (Eastern), British European Airways.

REYNOLDS, G. MORTON, M.B., B.Ch., D.P.H., Deputy Medical Officer of Health, School Medical Officer, and Deputy Port Medical Officer, County Borough of Great Yarmouth.

WILSON, JOHN GREENWOOD, M.D., F.R.C.P., D.P.H., Medical Officer of Health, Port of London (the appointment will subsequently be amalgamated with that of the City of London).

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Harris.—On May 15, 1954, to Juliette, wife of L. H. Harris, M.B., B.S., of 2, Durrisdeer House, Lyndale, London, N.W., a sister for Adrian and Darrell—Yulanie Chérie.

Henry.—On May 19, 1954, at British Military Hospital, Klagenfurt, Austria, to Hilda (formerly Loble), wife of Captain E. R. Henry, R.A.M.C., a daughter—Alison Claire.

DEATHS

Aldridge.—On May 15, 1954, Arthur William Aldridge, M.B., B.S., of Batsford Avenue Road, Great Malvern, Worcs, late of Thickthorn, Northfield, Worcs, aged 79.

Beesly.—On May 9, 1954, at his home, Newbury, Berks, Lewis Beesly, F.R.C.S.Ed.

Blake.—On May 15, 1954, at Orchard Cottage, Nailsworth, Glos, Anthony Fewster Blake, M.R.C.S., L.R.C.P., formerly of Grays, Essex, aged 84.

Brown.—On May 9, 1954, at Ardeer House, Shankhouse, Cramlington, Northumberland, William Brown, M.B., Ch.B., aged 53.

Butler.—On May 17, 1954, at 53, Charlotte Street, Leith, Edinburgh, James Butler, M.B., C.M.

Chambers.—On May 13, 1954, at 51, Bushey Hall Road, Bushey, Herts, Elsie Blair Chambers, M.B., Ch.B.

Corbett.—On May 19, 1954, at Fairwinds, Kingswear, South Devon, George Holmes Uvedale Corbett, M.B., B.C., aged 75.

Ellis.—On May 5, 1954, John Stanley Ellis, M.R.C.S., L.R.C.P., of 32, Combe Park, Bath.

Fraser.—On May 7, 1954, at Swansea General Hospital, George John Fraser, M.B., Ch.B., of Brynheulog, Mayals, Swansea, late of Glen Urquhart, Inverness-shire.

Garson.—On May 15, 1954, John Ross Garson, M.B., B.S., of 3, Daleham Avenue, Egham, Surrey.

Hardcastle.—On May 17, 1954, in hospital, Douglas Noël Hardcastle, M.R.C.S., L.R.C.P., D.P.M., F.B.Ps.S., of 48, Warwick Road, Bishop's Stortford, Herts, aged 62.

Higgins.—On May 11, 1954, at the Royal Infirmary, Lancaster, James Basil Higgins, M.B., Ch.B., D.M.R.E., aged 62.

Hirson.—On May 18, 1954, Bernard Hirson, L.R.C.P.&S.I. & L.M., of 409, Cheetham Hill Road, Manchester.

MacQuistan.—On April 15, 1954, John Archibald MacQuistan, M.B., Ch.B., of Upper Oldfield Park, Bath, Somerset, formerly of Glasgow.

Pilcher.—On May 4, 1954, at Cleveland, Ohio, U.S.A., J. Douglas Pilcher, M.D., husband of Jean Lorrain Pilcher (formerly Smith), M.B., Ch.B.

Sheedy.—On May 4, 1954, at Yelverton, Devon, Thomas Sheedy, O.B.E., L.R.C.P.&S.I. & L.M.

Sidebotham.—On May 11, 1954, at St. Thomas's Hospital, London, S.E., Francis Nasmyth Sidebotham, M.D., of Bendarroch, Ottery St. Mary, Devon.

Smith.—On May 11, 1954, at Stroud, Glos, Charles Charnock Smith, M.R.C.S., L.R.C.P., J.P., late of Woburn, Beds, and Hastings, Sussex, aged 82.

Wilshere.—On May 16, 1954, at University College Hospital, London, W.C., Basil Hamilton Wilshere, M.R.C.S., L.R.C.P., D.A., L.D.S. R.C.S., of Purley, Surrey.

Yarrow.—On May 14, 1954, at Stamford Hill, London, N., Philip Yarrow, M.R.C.S., L.R.C.P.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Decompression of the Bladder

Q.—*What are the rules about decompressing bladders? Chronic retention should be decompressed slowly—how slowly, and what is a fool-proof method? Acute retention can be decompressed rapidly—but what actually constitutes a safe definition of acute retention?*

A.—The safest clinical distinction between acute and chronic retention is that the former is painful, the latter relatively or absolutely painless. The pain of acute retention may be relieved by catheterization while arrangements are made for the patient to be admitted to hospital. In chronic retention there is no pain to relieve, and it is wrong to empty the bladder either quickly or slowly until the patient is in hospital, where the obstruction can be removed or drainage continued until the operation is considered safe. In advanced cases of chronic retention where preliminary drainage is thought to be necessary the safest method is the small suprapubic catheter; the initial decompression should take 12 hours.

An Epileptic Relative and Marriage

Q.—*What advice should be given to a young couple who want to marry, but there is a history of epilepsy in a near relative on one side (in this instance a brother)? Will an electroencephalographic examination of both partners definitely exclude increased risk of epileptic children if the tracings are normal in both? What should be said if one or both of the tracings are abnormal?*

A.—It is assumed that the only history of epilepsy in the family of either partner is the case of the brother mentioned in the question and that neither partner has had any fits. In these circumstances the likelihood of children of the marriage developing idiopathic epilepsy is very small, and this would be strengthened if both partners have normal E.E.G. records. If both partners should have typical epileptic records it is probable that the chance of a child developing epilepsy is considerably increased. Complete dogmatism in answering this question is impossible, as there are still considerable gaps in our knowledge about the inheritance of epilepsy. An important contribution to the subject was published by W. G. Lennox.[1]

REFERENCE

[1] *J. Amer. med. Ass.*, 1951, **146**, 529.

Dangers of Liquor Arsenicalis

Q.—*Is there any evidence that very small doses of arsenic, such as a minim (0.6 ml.) of liquor arsenicalis daily, taken over long periods give rise to cirrhosis of the liver? Doses of this order are sometimes included in sedative mixtures.*

A.—There are numerous reports of hepatic damage occurring during prolonged administration of liquor arsenicalis in therapeutic amounts in the treatment of leukaemia, etc.[1] However, there is little information in the literature about the maximum daily dose of inorganic arsenic which may be given without causing toxic effects. I know of no positive evidence that the daily taking of 1 minim of liquor arsenicalis over long periods has given rise to cirrhosis of the liver. Gowers is quoted by Stockman[2] as saying that the smallest amount of arsenic which he had ever known to give rise to pronounced arsenical pigmentation was equivalent to about 11,000 minims (7.3 g. of arsenic) of liquor arsenicalis during two years. This implies an average daily

intake of some 15 minims, and it is usually believed that in chronic arsenical poisoning skin manifestations precede toxic effects on the liver. After animal experiments prompted by the Manchester "epidemic" of arsenical poisoning in beer drinkers, Delépine[3] concluded that a dose of 1/150 to 1/25 gr. (0.4 to 2.6 mg.) daily was capable of producing injurious effects in the ill-fed or weak individual. The 1 minim dose of liquor arsenicalis contains about 0.6 mg. or 1/100 gr. of arsenic trioxide. The development of chronic arsenical poisoning depends on the dose, the form in which the arsenic is taken, the duration of exposure to risk, and any special susceptibility. It may be expected that the effects of alcohol, arsenic, infection, etc., may well be synergistic and lead to changes in the liver which might not occur with one agent alone.

It is difficult to justify the inclusion of liquor arsenicalis in sedative mixtures, and in view of what has been said above it would be wiser not to prescribe for repeated use mixtures containing even such small quantities of a potentially dangerous cumulative poison.

REFERENCES
[1] Franklin, M., Bean, W. B., and Hardin, R. C. (1950). *Amer. J. med. Sci.*, 219, 589.
[2] Stockman, R. (1921). *Edinb. med. J.*, 27, 1.
[3] Delépine (1903). Report of Royal Commission on Arsenical Poisoning. 1, app. 16, p. 185. H.M.S.O., London.

Sudden Loss of Hair

Q.—*A healthy man of 42 lost every hair on his body more or less overnight over five years ago, and there was no sign of any regrowth until recently following an emergency gastrectomy for severe haematemesis with transfusion of four pints of blood. What could be the cause of such a sudden loss of hair in the absence of any illness or emotional upset? Is the recent regrowth connected with either the shock following haemorrhage and operation or the blood transfusion?*

A.—It seems almost certain that this is a case of alopecia totalis, usually regarded as a severe form of alopecia areata. The cause of this disorder is quite unknown, though if there has been an antecedent illness, stress, or shock it is tempting to attribute the baldness to this. Recovery from alopecia totalis is sometimes complete, but when it has already existed for some years the chances of much hair regrowing recede.

It is less often that regrowth of hair can be attributed to shock or other disturbances. However, Dillaha and Rothman[1] have reported recovery as a result of cortisone treatment, and presumably the recovery in the case mentioned may be related to this mechanism. In Dillaha and Rothman's cases the hair fell out again when cortisone was stopped.

REFERENCE
[1] *J. Amer. med. Ass.*, 1952, 150, 546.

Where to Sit for Television Viewing

Q.—*Is there any ratio between the size of the television screen and the distance between that screen and the eye for obtaining the optimum clarity of image, yet at the same time freedom from visual discomfort?*

A.—Since the number of lines in the structure of television images is fixed, there is a ratio between the size of the screen and the viewing distance at which the lines will be indistinguishable. The value of this ratio will depend on the visual acuity of the viewer. The number of lines in the B.B.C. transmissions is such that persons whose vision is not better than 6/6 will not distinguish the line structure of the picture on a 12-inch (30 cm.) diameter television tube at a viewing distance greater than about 6 feet (1.8 metres). The vision of many people is, however, 6/4.5 or better, and the lines on such a screen will be visible, though not unpleasantly conspicuous, at a viewing distance of 8 feet (2.4 metres) or more. If a receiver having a larger screen is used, it follows that the viewing distance must be proportionately increased if it is desired not to see the lines. However, freedom from visual discomfort when viewing television depends chiefly on other factors than line visibility. It is important to have the viewing room moderately illuminated, though in such a way that viewers cannot see the light sources directly nor see images of them mirrored by the screen they are watching. If this is done the screen should not prove glaring, nor will the brightness contrasts of which the picture is composed be spoiled. It is also important that the angle subtended by the screen at the viewer's eyes (the angular size of the field of attention) should not be too small, since unwonted restriction of eye movements is a potent cause of feelings of strain and ocular fatigue. For this reason it is better to have a relatively high ratio of screen size to viewing-distance, and accept the consequent visibility of the lines, than to insist on a ratio which is low enough to prevent detection of the lines.

Uric Acid Gravel

Q.—*I have a patient, a robust man of 35, who has repeated attacks of renal colic, not confined to one side. He then passes several small calculi about the size of a large pin's head. Analysis of the calculi show them to consist of uric acid and urates. Two complete urological investigations reveal no abnormality; there is apparently no mechanical defect, and his kidney function is excellent. Are there any measures, dietary or therapeutic, which would prevent the formation of these small calculi?*

A.—Uric acid gravel can to some extent be prevented by maintaining an alkaline urine and avoiding food rich in purines. The patient should avoid strong tea and black coffee, and the rich protein foods associated in idea with a Lord Mayor's banquet. Liver, kidneys, sweetbreads, and offal in general should be forbidden. The diet should contain an abundance of fruit and vegetables, and a fluid intake of about 5 pints (3 litres) a day should be the aim.

Cloudy Urine after Acetic Acid

Q.—*Are all phosphates in a cloudy urine dissolved by dilute acetic acid, or are some not soluble, or is the residual cloudiness due to something else?*

A.—All phosphates in a urine are dissolved on the addition of acetic acid. Any residual cloudiness might be due to oxalates or bacteria. If the cloud is due to oxalate it will become soluble on the addition of a little hydrochloric acid.

NOTES AND COMMENTS

Corrections.—In Table II in the medical memorandum on "Extreme Sensitivity to Insulin," by Dr. A. I. Roith (June 5, p. 1306), the amount of insulin given should have been 0.03 unit per kg. body weight, *not* 0.3 unit.

In the report of Mr. Ivor Lewis's contribution to the luncheon discussion on massive gastro-intestinal haemorrhage, at the recent sectional meeting of the American College of Surgeons in London (May 29, p. 1258), the number of cases on which he had operated personally should have read 96, *not* 196.

In the report by the Joint Committee of the Medical Research Council and Nuffield Foundation on "A Comparison of Cortisone and Aspirin in the Treatment of Early Cases of Rheumatoid Arthritis" (*Journal*, May 29, p. 1223), under the heading "Allocation to Treatment," "(c) . . . seven to nine months" should have read ". . . six to nine months." Similarly in Table I "Duration of symptoms" should be 6–9 months and not 7–9 months. In Table V under "Week 8 to 1 Year" +0.8 should have been −0.8.

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